The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

[The MINING JOURNAL is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.]

No. 2228.—VOL. XLVIII. LONDON, SATURDAY, MAY 4, 1878. [WITH SUPPLEMENT.] {PRICE ..... SIXPENCE. PER ANNUM, BY POST, £1 4s.

Lectures on Practical Mining in Germany.

CLAUSTHAL MINING SCHOOL NOTES—No. LXXI.*

BY J. CLARK JEFFERSON, A.R.S.M., WH. SC.,
Certificated Mining Engineer.
(Formerly Student at the Royal Bergakademie, Clausthal).

SECTION V.

Hitherto we have considered only such timbering as is intended to support single or isolated portions of the strata, except as in the case of the working faces in coal mines, where, however, the timbering, although consisting of a great number of pieces, is yet composed of single distinct unconnected timbers. We have now, however, to consider those cases where the strata require supporting, not in isolated places, but over large surfaces, and in which the timbering used is composed of several portions, all connected more or less together, and hence called

COMPOUND, OR COMBINED TIMBERING.

The most usual cases of compound timbering in levels are those used for the support of the roof, more rarely, though by no means seldom, the sides of the level or walls of the lode in the working places will require support, and in still rarer cases will the floor of the level require support. As would naturally be expected, cases often occur in which not only a single face but two adjoining ones—as, for example, the roof and the hanging wall—require to be supported, and in very rare cases both the roof and floor and the two sides may require timbering. When this latter case occurs it most generally arises in driving through loose or quick strata, and in which the timbering must be effected simultaneously, and sometimes even slightly in advance of the excavation of the level. The extreme case occurs when the face of the level also requires to be timbered. Under these latter circumstances recourse must be had to the so-called "Getriebe" timbering.

Corresponding to the above distinctions, we shall consider compound timbering in levels and workings in the following order:—

a—Roof timbering (German, Firstenzimmerung).

b.—Side timbering (German, Stoss-zimmerung).

c.—Combined roof and side timbering, or door-set timbering (German, Combinirte Firsten und Stosszimmerung, or Thurstockzimmerung).

d.—Floor timbering (German, Sohlenzimmerung).

e—Combined floor and side timbering (German, Combinirte Sohlen und Stoss-zimmerung).

f—Driving timbering (German, Getriebzimmerung).

(a.) ROOF TIMBERING.—The simplest case of roof timbering is the so-called Firstenverziehen, also Firstenverzug.† This consists of a row of stempels placed at a uniform height above the floor of the level, and at a uniform distance from each other, and which are suitably covered by planking or covering wood. The stempels generally consist of two sizes. The larger and stronger stempels, called the principal stempels, are generally placed at a distance of 10 feet to 14 feet apart, and will have a uniform inclination from side to side (the feet of the stempels will rest against the lying wall in a straight line, and likewise those ends of the stempels which rest against the hanging wall, so that the stempels will lie in one plane). On the top of these stempels the planks, or pieces of covering wood, are laid. These are generally the pieces which we have before called Schwarten, and which are segmental in section. In order, however, to make them fit closer, and to ensure that they are of the same breadth throughout, they are generally cut on both sides. The covering wood is generally placed with the flat side downwards, resting upon the stempels; this gives the covering wood great steadiness in its position, and when the sides of the covering wood have been sawn the roof can be closed tightly. On the other hand, as pointed out by Daub, this position is that in which half round wood is least capable of supporting a weight, though where the Schwarten are used (wood of which the section is only segmental, and not half round) it is doubtful if this advantage is so great as is supposed; and it must be admitted that when resting with the curved face on the stempel the covering wood is not so steady in position, and it will be sure to leave gaps between the separate pieces, owing to their various thicknesses, through which the water might readily carry the small pieces of attle packing. The covering wood is usually cut of a uniform length, so that one end rests on one of the stronger stempels, and the other on the next—or rather the next—principal stempel upon the back end of the next piece of covering wood stretching across from this second to a third principal stempel. When one set of covering wood has thus been laid across from one stempel to the other, a smaller stempel is placed beneath and half way between the principal stempels. In this manner a principal or strong stemple alternates, with a so called middle, or weaker, stempel. Under certain circumstances and conditions it may be found advisable to place the principal stempels further apart, and to insert two middle stempels; more rarely the stempels are all of one uniform size, their distance apart varying from 2 ft. 6 in. to 4 ft. It is evident that where larger stempels are used, of such a strength as to necessite fewer of them, the labour of putting them in place (dressing the stempel notch, &c.) is much less than in the case of a great number of smaller ones, besides requiring less timber for the same amount of strength. On the top of the covering wood the smaller pieces of attle packing are thrown, the whole being bedded well down on the covering wood, and on this the larger irregular pieces are then first thrown; the whole of the space left between the roof and the covering wood being then filled tightly up with the attle packing. By placing a layer of small attle packing immediately on the covering wood the weight of the larger pieces is more uniformly distributed over the covering wood, and the larger pieces of attle rest more steadily than they would otherwise do It is of the greatest importance that the space between the roof and the covering wood should be filled as tightly as possible by hand, so as to allow of no movement of the roof should any portion loose or detach itself from the rest, since if any movement of the strata were to take place it might result in distributing the load very unequally on the stempels, or in case a sudden drop were possible, to break down the timbering.

In metalliferous mines, as the ground is stoped away by the method of overstoping, the empty space thus excavated must be filled with attle, and in order to keep the levels open the attle must be supported above them. Likewise in the case of understoping the empty space excavated must be filled up, and simply for the purpose of keeping up the attle, or rather to form a bottom on which it can be supported, irrespective of any reference to levels for the conveyance of ore, a sort of scaffolding on which the attle can be thrown must be provided. Such a support is denominated the "Firstenkasten," or more generally "Firstenkastenschlag." Practically speaking, it is the same arrangement we have just described—Firstenverzug—only of stronger dimensions. As the object of a Firstenkastenschlag is the supporting of a vertical pressure, like a beam, the mode in which the stempel is fitted against the walls of the lode is not of such vital importance as where the main pressure is in the direction of the length of the stempel. Besides, in the case of understoping, except the lowest Kastenschlag, immediately over and forming the roof of the level, the stempels are bedded in amongst the attle, and since they cannot be got at afterwards for renewals or repairs, the stempels should on that account be made correspondingly stronger when first put in.

Although in general the arrangement that we have described as Firstenverzug is as often used as that we have just called Firstenkastenschlag, still, according to Sickel, there is a distinction. This distinction lies in the insertion of a piece of half round wood, called a Pfandung, between the ends of the covering which overlap, and which is placed immediately above the principal stempel. The two chief advantages of this arrangement are that whenever it is necessary to withdraw one of the pieces of covering wood, owing to its being broken or requiring renewal, an empty space is left, in which the new one can be readily inserted. This space would be immediately closed up in the arrangement we have described as Firstenverzug, unless the covering wood was laid so as to break joint. The great advantage, however, lies in the fact that when it is necessary to replace the principal stempels by new ones the Pfandung prevents the ends of the covering wood being bent down, which would render it difficult to insert a new stempel exactly in the place of the old one. In this arrangement, as one end of a lath of covering wood rests disectly on the principal stempel, and the other rests on the Pfandung, the middle stempel must be placed slightly higher than the principal ones.

In the case of very wide lodes, although there may be no difficulty in obtaining stempels of sufficient length, in consequence of the great distance between the points of support (the Buhnloch and the Antrag) they are much more liable to be broken in two, especially seeing that they have to support a much greater superincumbent load of attle packing. The most usual method of remedying the above is to insert a strut generally from the hanging side to the centre of the stempel. The end of the strut to be supported from the hanging wall is first cut with a large and small face, both inclined—forming an angle of about 70° with the axis of the strut. The centre of the underside of the stempel is notched by making a saw cut about 1½ in. deep, and then cutting an inclined face towards the hanging side; the upper end of the strut is cut to correspond. In placing them in position either the upper end of the strut must be driven in sideways, after the stempel has been fixed tightly in position, or the foot of the strut and the lower end of the stempel must be footed in the walls of the lode, and the upper ends of the strut placed in the notch on the underside of the stempel, and the upper end of the stempel then first driven tight against the hanging wall of the lode. The first of these two methods appears decidedly the one to be preferred. Where the lode runs comparatively flat it may be found best to fix the strut against the lying wall of the lode, whilst in many cases recourse would be had to two struts, one with the foot fixed in the hanging and the other in the lying wall of the lode. The two upper ends of the struts would be hollowed out on the upper edges, to correspond to the round form of the stempel, whilst the opposite edges would be cut with faces to bear against each other. In order to economise wood, and in the case of levels, where such long struts as are necessary in this arrangement would be inconvenient, and more especially in the case of nearly vertical lodes, the struts used may be made much shorter, and abut separately against the underside of the stempel, supporting the latter in two places instead of one, as in the former arrangement. A modification of this last arrangement, and one which obviates entirely the necessity of notching the underside of the stempel, is that of placing a second shorter stempel immediately beneath the principal one, and between the upper ends of the two struts. The upper ends of the struts, and both ends of the shorter stempel, are cut so as to abut against each other. Usually when this arrangement is adopted the shorter stempel will have a length nearly, if not quite equal to half that of the principal stempel, and but rarely is it so short as one-third the length of the principal stempel.

In the case of highly inclined lodes of considerable width, and as much more economical in respect of timber, is the so-called rafter timbering used in the wide lodes at Ehrenfriedersdorf in Saxony and Marienberg in the Erzgebirge. This consists of two stempels in the place of one, the lower ends of both being fixed in notches in the hanging and lying wall respectively. Both these stempels rise upwards towards the centre of the level like the rafters of an ordinary roof. The upper ends of the stempels are cut so that the faces are vertical when the stemples are fixed at their proper inclination. The upper ends of the stempels do not abut directly against each other, but leave an empty space about 3 in wide, in which a long plank or beam 3 in. thick is inserted, and which stretches across several numbers of stempels, thus holding them together, and preventing any liability to a sidewards movement on the part of one or other set of stempels. This longitudinal plank bears the name of "stringing piece," and it is generally arranged that the place where two of these abut against each other shall come to be between two ends of a set of stempels. The stemples are then boarded with covering wood, and the attle packing carefully piled upon these. It is of the greatest importance that such rafter timbering be uniformly and equally loaded on both sides of the stringing piece, otherwise the stempels might readily be forced out of position, and so lead to a collapse of the timbering. The inclination at which the stempels are placed is usually one in four—that is, the vertical height of the upper ends of the stempels above the lower ends strutted in the hanging and lying walls is about one-eighth the width of the lode.

The most usual way of supporting the roof in stratified mines is, as we have before mentioned, by single props. In the case of wide lodes and nearly level coal seams, where use of a single stempel is almost impossible, the bearer or cap is supported from below by means, in the simplest case, of a single prop placed in the centre. In such cases, where the stempel takes but a subordinate place in the support of the roof, it generally takes the name of under-bearer (German, Unterzug). Sometimes the under-bearer will be held by two props, the upper ends of the props being hollowed out so as to fit the round under side of the bearer. In some of the collieries in Upper Silesia, in order to support the roof in the drifts or levels, the under-bearer is fitted in notches in both sides of the level, and supported in the centre by a prop sunk 4 or 5 in. in the floor, whilst in other cases the stempels are supported by means of a long bearer placed close against the under side of the stempels in the middle of their length; the bearer, which is thus only supported by a prop placed beneath it at every third or fourth stempel, runs in (and not across) the direction of the level.

The most complicated arrangement of the use of props for supporting the roof occurs in the case of very thick coal seams—6 yards and above—where the coal is worked away at once. The object of the arrangement we are about to describe is not only to support the roof, but to prevent the falling mass from rolling in against the face, or, more strictly speaking, into one of the roadways. At a distance of from 5 to 10 yards from the coal face a row of props (in the case of a 7-yard seam) of about 20 ft. in height are placed from 6 to 12 in. apart, and supporting a common cap piece or lid of considerable length. Close behind, and against these, two or more horizontal bars are placed at different heights, and each strutted by three props against the floor. The uppermost of the bars is generally also strutted against the roof. In some cases the bars are kept at the proper distance apart by means of vertical props or sprags placed between them. These horizontal bars are often backed by a couple of strong (10 or 11 in.) props let in both in the roof and floor, and sometimes these props are again backed by means of a couple of horizontal bars, which are kept at the proper distance apart by means of a couple of vertical sprags; the top horizontal bar is further strutted against the roof by means of two struts, and the lower horizontal bar against the floor by means of a couple of struts. This description of timbering is used with greater or less modifications in the working of the thick seams in Upper Silesia.

COATING METALS WITH TIN.—For the purpose of coating metals with tin Messrs. NEUBURG and Co., of Vienna, propose to use a zinc and carbon battery. The inner cell containing the carbon is half filled with chromic acid, and the outer cell containing the zinc is filled with dilute sulphuric acid. The articles to be coated with tin are put into a bath composed of protochloride of tin and cream of tartar, with or without chloride of tin (tin salt). The proportions of these ingredients are—Eight parts of protochloride of tin, sixteen parts of cream of tartar, and two parts of the chloride or tin salt, if the latter is used. When this tin salt is present the tin coating is effected more rapidly, whereas when the bath is composed of protochloride of tin and cream of tartar only the tin coating is very white, but is not produced so rapidly as when the chloride or tin salt is used. These ingredients should be dissolved in about 500 litres or about 100 gallons of distilled water. The black plates are first "pickled" in any suitable manner, and then immersed in the above-described bath or solution, and are allowed to remain in the same for a longer or shorter time, according to the thickness of the deposit or coating of tin required on the plates. While in this bath the plates or other pieces to be coated are connected by a wire with the positive end of the battery, whilst the negative end of the battery is connected with a piece of tin hung in the same bath. When the plates or other pieces or articles have been sufficiently coated with tin they are held over a fire in order to give the tin a lustrous appearance.

GEOLOGICAL SOCIETY OF LONDON.

April 17.—HENRY CLIFTON SORBY, F.R.S. (President), in the chair.

John Collins, Bolton-le-Moors, was proposed as a Fellow of the Society.——Chas. Preller Sheibner, Ph.D. (Leipzig), A.I.C.E., Charles-street, Grosvenor-square, will be balloted for as a Fellow of the Society.—The following communications were read:—

1.—"On the Geological results of the Polar Expedition under Admiral Sir George Nares, F.R.S.," by Capt. H. W. Feilden, R.A., F.G.S., and C. E. De Rance, F.G.S

2.—"On the Palæontological results of the recent Polar Expedition under Admiral Sir George Nares, K.C.B., F.R.S." by Capt. H. W. Feilden, R.A., F.G.S., and R. Etheridge, F.R.S., F.G.S.

The next meeting of the Society will be held on Wednesday, May 8, when the following communications will be read:—1. "On the Glacial Phenomena of the Long Island, or Outer Hebrides," by James Geikie, F.R.S., F.G.S.—2. "On Cataclysmic Theories of Geological Climate," by James Croll: communicated by Prof. A. C. Ramsay, F.R.S., F.G.S.—3. "On the Distribution of Ice during the Glacial Period," by T. F. Jamieson, F.G.S.

VISIT TO THE BETTISFIELD COLLIERY, NORTH WALES.

A large party of mining engineers from all parts of the Midland coal field and Lancashire, including members of the council of the Yorkshire College and the students attending the course of lectures on coal mining at the above college, and her Majesty's Inspectors of Mines for Lancashire and Wales (Messrs. Hedley and Hall) visited Bagillt on Wednesday week by the invitation of Mr. Arnold Lupton, F.G.S., mining engineer, and instructor in coal mining at the Yorkshire College, Leeds. The party reached Bagillt early in the morning, and immediately went down the pits of the Bettisfield Colliery Company, of which Mr. Lupton has for more than five years been the resident engineer and manager. The down-cast shaft is 17 feet in diameter, and the upcast is 11 feet in diameter, and 281 yards deep. The archway at the pit bottom is large enough for a railway tunnel, and extends in a straight line for over 600 yards, the size being reduced 100 yards from the shaft. The tunnel was lit up for the occasion with 300 of Teale's patent protector safety lamps. The hauling of the coal up the inclines is done by compressed air machinery and endless rope machines, using Fowler's clip drum. In the sinking of these pits some of the greatest difficulties engineers have ever had to face were encountered. Being situated actually on the estuary of the Dee, there was a great thickness of soft sand to encounter, in addition to enormous feeders of water, and through these obstacles one of the pits was sunk by divers, who not only sunk under 100 ft. of water, but put the tubbing in also. The pressure of water in the second pit was overcome by means of an iron tube, 6 ft. diameter, commencing at the pit top and going down to within 8 or 10 ft. of the bottom, when it was widened out to the size of the pit. Into this tube and bell, air was compressed to about 60 lbs., or four atmospheres. This was a greater pressure per square inch by about 10 lbs. than the pressure of the water oozing out of the pit bottom, hence this was kept dry, the water being actually kept back by the excess of pressure. The sinkers were only allowed to remain in this extraordinary pressure for 20 minutes at a time. The pit is ventilated by a large Rammel fan, and the works as a whole constitute a fine colliery plant. The party breakfasted in the carpenters' shop.

The inspection of the colliery occupied about five hours, after which the party divided into two sections, one going to the Halkyn Mountains, about four miles distant, to inspect the lead mines of the Duke of Westminster and others, where a level is in course of driving which will be eventually 7 miles long; it is being driven by means of Major Beaumont's rock-drilling machine. After leaving Halkyn this division of the party drove to Mostyn, calling at Holywell on the way to inspect the far-famed well or spring, which is the largest in these kingdoms, and throws up every minute the enormous quantity of 100 tons, or 22,400 gallons, of water. It never varies winter or summer. It boils up with vast impetuosity out of a rock, and is formed into a beautiful polygonal well, covered with a rich arch supported by pillars. The roof is exquisitely carved in stone. Immediately over the fountain is the legend of St. Winifred on a pendant projection, with the arms of England at the bottom. It exhibits a remarkable spectacle, and is one of the most wonderful works of Nature. The water rises with such force and in such vast quantities that, although but a mile from the sea, it instantly forms a river, and constantly supplies several mills and manufactories. The second half of the party, after leaving Bettisfield, drove to the Mostyn Colliery, where Captain Arthur kindly explained the machinery under his charge, including an enormous pumping-engine, cylinder 100 in. in diameter, and 14 ft. stroke.

The whole party were then entertained by Mr. Lupton to a sumptuous dinner at the Mostyn Arms Hotel, Mostyn. After dinner Mr. Walter Rowley, of Leeds, proposed the health of Mr. Lupton, and said his inspection that morning of the Bettisfield Colliery had confirmed the satisfaction he felt that they had secured him as instructor at the Yorkshire College. Mr. Rowley directed the attention of the engineers present from so many parts of the Midland coal field to the great privilege afforded by the various classes of the college to all engaged in mining operations, and he ventured to predict that Mr. Lupton's future career, like his course in the past, would reflect credit upon that college, and honour to the profession, the interests of which all present had so much at heart.—Mr. Lupton replied.—Mr. W. H. Peacock, F.G.S., proposed the health of Her Majesty's Inspectors of Mines, a body of gentlemen who were at all times ready to aid the owners and managers of collieries and mines by their counsel and advice, and from whom many of those present had probably received numerous acts of kindness.—Mr. Henry Hall, Chief Inspector for North Wales and West Lancashire, in acknowledging the toast, said he was convinced there was great utility in meetings of mining engineers to discuss technical questions, and to see collieries in different parts of the country. He also congratulated the Yorkshire College on the appointment of Mr. Lupton as instructor, as he combined a practical knowledge of engineering with the faculty of imparting that knowledge to others.—Mr. J. L. Hedley, Inspector of Mines, endorsed the remarks made by Mr. Hall, and said he had known Mr. Lupton for many years, and hoped he would remain in the district.—Mr. Lupton then proposed the health of secretaries of Mining Institutes, coupling with it the names of Messrs. W. F. Howard and W. H. Peacock, and expressed his sense of the great services rendered by those gentlemen, whose attainments entitled them to the honourable position they held.—Mr. W. F. Howard and Mr. W. H. Peacock both responded, and pointed out the importance of members bringing before their respective institutes matters of interest connected with mining.—Mr. Lupton proposed the health of the Council of the Yorkshire College, coupling with the toast the name of Mr. Walter Rowley. In his opinion the men who gave money and valuable time, without thought or hope of reward, but simply to advance the knowledge and civilisation of the country, gave one of the noblest examples of real philanthropy.—Mr. Rowley briefly replied, expressing his conviction that time and money spent in endeavouring to raise men capable of continuing such works as they had that day seen was a work of which all engaged might reflect upon with pride.

The company then broke up, the majority catching the 4 P.M. train at Mostyn for Chester, but a party of six drove on to the point of Air, to inspect the pits of the West Mostyn Coal and Iron Company, which are at present standing; one pit is about 150 yards deep, and having had to encounter the same difficulties with sand and water as

---

* Being Notes on a Course of Lectures on Mining, delivered by Herr Bergrath, Dr. VON GRODDECK, Director of the Royal Bergakademie, Clausthal, The Harz, North Germany

† The writer is again compelled to retain the German names, owing to his ignorance of, or the want of, corresponding distinctive English terms. Should any of our readers be acquainted with suitable local terms which possess sufficient distinctiveness we should esteem it a favour to have the opportunity of making them more generally known.

the Bettisfield Colliery. The following gentlemen, among others, accepted Mr. Lupton's invitation. One or two were prevented at the last moment from attending:—Mr. Henry Hall, Her Majesty's Chief Inspector of Mines; Mr. G. L. Hedley, Her Majesty's Inspector of Mines; Mr. T. W. Embleton, President of the Midland Institute of Mining, Civil, and Mechanical Engineers; Mr. W. H. Peacock, secretary of ditto; Mr. W. F. Howard, secretary of the Chesterfield Institute of Mining Engineers; Mr. Walter Rowley, Member of the Council of Yorkshire College; Mr. W. C. Fowler, Mr. Robert Howe, Mr. Alfred Boult, Mr. Wilfred Boult, Mr. R. C. Strelley, Mr. W. S. Gresley, Mr. E Eardley, Mr. John Bryham, Mr. Maurice Deacon, Mr. J. Taylor, Mr. R. G. Barnes, Mr. O. Lupton, Mr. H. S. Childe, Mr. H. Wood, Mr. W. C. Walker, Major Hague, Mr. Alfred Ackroyd, &c.

THE PARIS UNIVERSAL EXHIBITION.

The event of the week is unquestionably the opening of the Paris Universal Exhibition, 1878, and it is gratifying to find that however incomplete the exhibits of other countries may be, England and her colonies are ready to time and make brilliant display, whilst the admirable catalogues prepared by the direction of the Royal Commissioners facilitate to the utmost the examination of the products shown. Although other portions are doubtless more picturesque to the general visitor, the fifth and sixth groups embracing the raw and manufactured products of mining industry, and apparatus and processes used in the mechanical industries, are those which will prove most attractive to the majority of the readers of the *Mining Journal*, and it must be admitted that both the products and the machinery are of a class of which the country may well be proud. The British Commissioners are quite justified in assuming, as they have done, that the British nation takes the deepest interest in the ultimate success of the French Exhibition, and that to us as a manufacturing people the machinery question in all its bearings before the world is of the most vital importance. Our annual production of machinery is now so enormous as to determine in a great measure the means of obtaining a livelihood for a large proportion of the population. Hence the anxiety which has been manifested that we should produce a good impression by the character of our productions, and the keen desire that we may hold our own in a friendly rivalry with the other competing nations: but owing to the great paucity of reliable statistical information concerning the annual production of the manufactories of great Britain, its value, the numbers of workmen engaged thereon, and its ultimate destination, it is impracticable to give more than general observations upon it.

To cultivate the habit of examining machinery from the intellectual point of view rather than from the stand-point of its material fabrication will greatly add to the interest which the intelligent non-professional visitor will derive from the contents of the Machinery Hall at an International Exhibition. To the more limited class of visitors—those who are experts in mechanical questions, or who are chiefly interested in the commercial aspect of the subject—an entirely different order of considerations naturally suggests itself for enquiry. Other motives of a technological nature step in, and secure the most earnest attention voluntarily, as a mere matter of business Such experts seize, each one for himself, upon the particular class of machines or other objects in which they are severally more especially interested; and for them a varied store of printed information is usually provided by the exhibitors. Such experts, however, constitute but a small minority of the interested crowds who throng the passages of an Exhibition. There is comparatively little done to aid the great majority of visitors in appreciating the wonderful things that are to be seen in the section set apart for the display of machinery. It consequently seems to many a hopeless task to try to examine and unravel the apparently intricate labyrinth of mechanism, and still more hopeless to endeavour to comprehend its aim or the mechanical functions and contrivances that are employed to accomplish the object. As a general rule, the leading features of machinery may be readily understood, but for some reason the difficulty of understanding them is much overrated. If the examination be approached in a systematic manner a machine will soon appear very simple, at least in so far as its leading features are concerned, and the more technical details of the mechanism are not essential to the ordinary amateur.

The machinery used in the cotton manufacture is an exhibition and a study in itself, but there is another group which at all international exhibitions occupies an important place—that of machine tools. This is a class of machinery which originated in Great Britain, and in the manufacture of which we have taken and hitherto maintained the lead, and our types of machines have been copied more or less by the greater number of competing nations. This department of machinery is of the highest consequence, because it lies at the root of all other machinery construction. When the machine tool system of construction has been introduced in its entirety, as it has been in some of the larger manufacturing houses of England, the several parts of the structural skeleton are so planed or otherwise shaped by accurate machine tools that when the several parts are brought face to face for the first time they fit each other exactly without adjustment. In the construction of certain kinds of machinery, such as steam-engines, accuracy in the machine tools is the cardinal virtue whenever the aim to a high standard is paramount. Consequently, the employment of machine tools of the highest class and most correct workmanship is absolutely necessary, in order that the same good qualities may in some measure be transmitted to the work proceeding from them. Tools are essentially machines for transferring their own qualities to other things produced by their means. Another question which comes in for discussion is that of the proper strength of machinery structures, and the correct proportions to be given in the disposal of the material throughout. Of late years a great advance has been made in the extended knowledge of the principles here involved, so that we rarely see the wide departures from natural laws which were formerly so prevalent, more especially among some of our foreign competitors. Constructors now recognise the truth that correct form is derived from Nature, and consists in giving to each part of the structure the exact proportion of substance that will enable it to fulfil its respective share of the duty imposed; and in placing or disposing of each portion of the materials under the most favourable conditions of which the circumstances will admit. When, however, a constructor obtains the requisite strength by heaping on material, regardless of the natural principle, his productions are clumsy and at the same time expensive.

In the British section at the Paris Exhibition it is scarcely necessary to single out any special exhibit for distinction. Planing machines, lathes, shaping machines, drills, &c., are exhibited by most of the leading houses; steam and other hammers are also largely shown, and some special machinery, in which hydraulic power is utilised, will well repay a careful examination. In machine tools for working wood, the British division contains several large collections from the leading firms. This is an important branch of manufacture, and is being rapidly developed, year by year approaching more closely to perfection. Stone dressing machinery should also be carefully examined, as it is becoming more and more necessary owing to the difficulty experienced in controlling the skilled labour which is required to prepare the expensive stones for building and other purposes, and it is only at exhibitions that the general mechanician can see the working of stones by machinery. In various existing machines the action of the stonemason is nearly copied, and in some Italian machines it is literally imitated, even to the hammer and chisel. But the greater number made in England are founded on a system of extreme pressure combined with slow motion. In the granite and stone sawing machines, in which the teeth are formed of diamonds, the saws are driven at high velocity, and a deluge of water is employed to keep down the temperature. With regard to machine tools for shaping stones, the supply is still limited. Of those for rock-boring, with diamonds as the detruding instruments, several are shown at Paris, but the most interesting shaping machinery in the British division will probably be that for shaping stones, either to flat surfaces or into irregular forms, as in the production of columns by turning, as in a lathe. Machines for working granite are shown in actual operation.

It is very truly said that England is the birthplace of the locomotive engine, and the British machinery section at Paris gives a good representation of our locomotive engines of various sorts. The list includes engines designed for both fast passenger and goods traffic and also small engines constructed with narrow gauge for special purposes. There is also a locomotive steam tram-engine, said to be adapted for working with little noise. Lastly, there is a steam tram-car of improved construction. Still it will, probably, be found that the mark of George Stephenson, which was impressed so deeply upon the earlier locomotive engine, is not to be readily effaced by those who have come after him, and who are now endeavouring to meet the requirements of new necessities for another generation. In the British section there is likewise found one of the caloric or hot air engines, which holds out the hope that some of the more formidable practical difficulties which have hitherto prevented these engines from becoming generally useful have at length been overcome; hence it is likely that this engine will be an object of the utmost interest to engineers. There is, further, a fair display of hydraulic machinery, which for many purposes possesses important practical advantages over any other arrangement. This is a department which will repay careful examination. Several firms exhibit hoists, lifts, and elevators. It is a kind of machinery which is now extensively employed in raising men and materials from one elevation to another. One important point to be carefully examined in connection with such apparatus is their relative safety. In past times many accidents occurred through them, until public opinion compelled close attention to be given to this most essential condition of perfect security. There are some of them now at work so absolutely safe, and so well prepared for every possible contingency, that an accident seems impossible.

During our visit to Paris it behoves, as Mr. John Anderson in his admirable introduction to the Official Catalogue wisely suggests, all earnest and intelligent men to bear in mind the serious depression of trade which now exists all over the world, and which affects Great Britain especially in her most vital interests. We seem to require a new point of departure by the addition of new classes of articles to manufacture of those kinds to which we are best fitted to contribute our share, so that as one class of industry closes another door may be opened. The present crisis in trade shows that, even with all our mechanical advantages, commercial prosperity is at the best but a perishable commodity, for we seem to be subject to external influences which seriously affect the warp and woof of the entire texture of the working world of applied mechanics, and the intricate web of commercial reciprocities is a difficult task to unravel, and apparently lies beyond our control. This great display of textile and other machinery made by Great Britain at the Paris Exhibition cannot fail to impress the minds of all who take the trouble to examine it in detail; and when we bear in mind that it is the fruit of long-continued self-denying efforts of many thousands of clever inventors, whose life-work in many instances has terminated in sad disappointment, due to want of practical success, and in the larger number of cases offering only a poor reward to the immediate contriver, we cannot help feeling that it unfolds much of the romance of modern life. Still, here it is, the grand epitome of a century's hard mental work, with the chaff eliminated from the wheat, a rich profusion of art and nature, and certainly a great sight, calculated to interest the men and women of all nations, our fellow-workers over the face of the earth.

Commencing with the fifth group, Class 43—mining and metallurgy—will first demand attention. It includes collections and specimens of rocks, minerals, ores; ornamental stones; hard stones; refractory substances; earths and clays; various mineral products; raw sulphur; rock salt; salt from salt springs. Mineral fuel, various kinds of coal, coal dust, and compressed coals; asphalt and rock asphalt; bitumen, mineral tar; petroleum &c. Metals in a crude state: pig-iron, iron, steel, cast-steel, copper, lead, silver, zinc, &c.; alloys; products of washing and refining precious metals, of gold beating, &c. Electro-metallurgy: objects gilt, silvered, or coated with copper, steel, nickel, &c., by the galvanic process. Products of the working of metals: rough castings, bells, wrought-iron, iron for special purposes, sheet-iron and tin-plates, iron plates for casing ships and constructions, &c. Sheet-iron coated with zinc or lead; copper, lead, and zinc sheets, &c. Manufactured metals: blacksmiths' work, wheels and tires, unwelded pipes, chains, &c. Wire drawing; needles, pins, wire-ropes, wire-work, and wire-gauze; perforated sheet iron. Hardware, edge-tools, ironmongery, copper, sheet-iron, tinware, &c., and other metal manufactures.

Among the exhibitors in this class, who are very numerous, may be noticed the Phosphor Bronze Company, which shows bearings and other parts of machinery which have been in use, showing the superior durability of the metal; wire for telegraphic purposes, for mines (as pit ropes, signal wires), for organs, and for paper makers, &c.; ornamental castings; harness furniture, tubes for locomotives and marine boilers; pressure gauges; sheets for sheathing ships, and for numerous other purposes; steam fittings; and tools for gunpowder mills. Mr. G. J. Snelus, A.R.S.M., of Workington, exhibits analysed specimens of iron ores and fluxes, and tested samples of iron and steel to illustrate and elucidate the metallurgy of iron and steel. Wayne's Merthyr Company (inaccurately printed Wayner in the official catalogue) has a fine piece of steam coal, showing the section of one of the several seams worked by this company, known as the "South Wales smokeless coal." Mr. Thos. Whitwell, of the Thornaby Ironworks, Stockton-on-Tees, shows a model of his fire-brick hot blast oven; collections of Bessemer and other iron made by this process; drawings of the hot blast ovens; and photographs of various works where the Whitwell ovens are in use. The Wigan Coal and Iron Company exhibits specimens of Arley coal, used principally for gas making and household purposes; specimens of Cannel, used for gas making, and producing a large quantity of gas of a high illuminating power; specimens of hematite iron ore, the produce of the company's mines at Messelmoun, near Cherchell, Algeria; specimens of pig-iron made from Messelmoun ore exclusively; specimens of pig-iron made from other ore; section of strata passed through in sinking the Lindsay pit at Wigan; and a view of ironworks, consisting of ten blast furnaces, in Kirkless, Wigan. Messrs. Henry Wiggin and Co., of Birmingham, show nickel and cobalt ores, refined oxides of nickel and cobalt, metallic nickel and cobalt, and nickel plates for electro depositing purposes. German silver sheets and wires, drawn, rolled, and ornamental patterns. Blanks for spoons and forks, plain and ornamental stamped patterns.

Passing the three succeeding classes, we come to the chemical and pharmaceutical products forming Class 47, which includes acids, alkalis, salts of all kinds. Sea salt and products extracted from mother water. Various products of chemistry, wax and fatty substances, soaps and candles, raw materials used in perfumery, resins, tar, and the products derived from them, essences and varnishes, various coating substances, blacking. Objects made of india-rubber and gutta-percha, dyes and colours. Mineral waters and natural and artificial aërated waters. Raw materials used in pharmacy. Medicines, simple and made up. In this class Mr. A. W. Gerrard exhibits pilocarpine, an alkaloid prepared from jaborandi, and some of its salts. Chrysophanic acid, an organic substance obtained from goa powder. Medicated suppositious Pessaries and Bougies. Adhesive plasters especially prepared for the surgical operator, combining strength, adhesion, and adaptability. Bromides of various alkaloids. Mr. James Mactear, of the St. Rollox Chemical Works, Glasgow, has a fine collection of specimens illustrating his various improvements in the manufacture of black ash, soda ash, soda crystals, caustic soda (of specially pure quality). Also the regeneration of the sulphur from alkali waste. At the St. Rollox Works over 6500 tons of sulphur have been extracted from alkali waste by the Mactear process. The Silicate Paint Company show silicate paint, dry and ground in oil. Silicate enamelling paint. Silicate petrifying liquid for damp walls, and as a cheap washable internal decoration in lieu of wall-paper. Silicate marine and anti-fouling paint, for use on ships, &c., boards, tiles, bricks, iron, zinc, &c., painted with these. And the Washington Chemical Company exhibit some blocks of pure carbonate of magnesia.

The sixth group, commencing with Class 50, is devoted to apparatus and processes used in the mechanical industries. The class mentioned includes apparatus and processes of the art of mining and metallurgy, and embraces boring apparatus for artesian wells, and wells of large diameters. Boring machines and apparatus for breaking down coal and cutting rocks; apparatus for blasting by electricity. Models, plans, and views of the mode of working in mines and quarries; works for obtaining mineral waters; machines and apparatus used for extracting ore, and for lowering and hoisting miners. Machines for draining; pumps. Ventilating apparatus; ventilators. Safety-lamps; lamps for electric light. Apparatus for saving life; parachutes; signals. Apparatus for the mechanical dressing of ores and mineral fuel. Apparatus for compressing fuel into cakes. Apparatus for the carbonisation of fuel; smelting furnaces; smoke consuming apparatus. Apparatus used in metal works. Special apparatus used in forges and foundries, electro-metallurgical apparatus, and apparatus used in metal manufactures of all kinds. Among the exhibitors may be mentioned Mr. H. R. Marsden, of Leeds, who shows an improved stone-breaker, with engine combined, 12 × 7 at the mouth, and fitted with the exhibitor's new patent reversible cubing jaw for making road metal. The novelty of this invention consists in the movable jaw being made with faces, instead of as heretofore in one piece, so that the said faces can be reversed—that is, turned upside down when they get worn down, and thus be made to serve twice as long as before; besides which, when they quite worn out they are replacable with a comparatively small casting, whereas under the old style the whole jaw had to be renewed. Messrs. John Fowler and Co., also of Leeds, exhibit a three-horse power patent traction-engine, a six-horse power patent special large wheeled traction-engine, an eight-horse power patent traction-engine, a double-cylinder semi portable engine, a single-cylinder engine for underground hauling on the tail rope system, a double-cylinder engine for underground hauling, and a patent clip drum.

Models of his patent drum dresser are exhibited by Mr. H. E. Taylor, of the Sandycroft Foundry, Chester, who also shows a new ore and coal washing machine; jigging machine, an improved apparatus for separating minerals from their gangues with a minimum quantity of water; Chester pump, an improved pumping-engine for forcing water, applicable to mines, collieries, waterworks, &c. In the next class (Class 51) Messrs. Clayton and Shuttleworth exhibit portable steam-engines for burning coal, wood, or straw, traction-engines, portable, fixture and stationary engines, thrashing machines, and grinding mills. Messrs. Howard, of Bedford, have a large collection, including steam ploughing engines for the combined purposes of steam ploughing, threshing, grinding, hauling, and other farm work, steam ploughs for turning up the land at various depths, steam cultivators for breaking or smashing up the land at various depths, steam scarifiers for stirring the land to a moderate depth, steam harrows for harrowing the land after it has been ploughed or broken up, single ploughs for horses or oxen to turn over the land one furrow at a time at various depths, double ploughs for horses or oxen to turn over the land two furrows at a time at various depths, triple ploughs for horses or oxen to turn over the land three furrows at a time at various depths, quadruple ploughs for horses or oxen to turn over the land four furrows at various depths, ridging ploughs for horses or oxen to mould up or form ridges for beet root, turnips and potatoes, potato ploughs for horses or oxen to raise up potatoes, vine ploughs for horses or oxen to turn up the land between the rows of vines, harrows for harrowing the land with horses or oxen after it has been ploughed or broken up, horse rakes for collecting hay, corn, or stubble, haymaking machines for making hay by tossing, turning over, and tedding cut grass with horses or oxen, mowing machines for cutting grass, clover, and other green crops, reaping machines for cutting wheat, barley, oats, and rye, reaping machines with sheaf binders, and models of self-moving anchors for steam ploughing, self-lifting steam cultivators, triple plough, harrows, self-acting horse rake, and mowing and reaping machines.

Messrs. Robey and Co., Lincoln, exhibit four, six, and eight horse power portable steam-engines, 16-horse power patent Robey fixed engine, with locomotive boiler, three-horse power vertical steam-engine and boiler, eight-horse power traction-engine. Corn mill, with two pairs of 3 ft. 6 in. millstones; flour dresser, No. 1 saw bench, with 42-inch saw; thrashing and finishing machine with 4 ft. 6 in. drum. And Messrs. Ransome, Sims, and Head show portable engine for burning coal and wood. Head and Shemioth's patent engines for burning straw, cotton, and maize stalks, megass, and other vegetable refuse. Fixed steam-engines, single or double cylinders, fitted with patent automatic governor expansion gear for regulating the speed of the engine. Improved traction-engines, of 6 and 8 horse-power, for for running along the common roads at a speed of 1½ and 3 miles an hour. Steam thrashing machines for wheat, barley, oats, rice, and other cereals. Steam thrashing machines, with apparatus for chopping and bruising the straw for fodder, the only machines thoroughly adapted to the hot countries. Corn mills with one, two, or more pair of stones for grinding all kinds of grain, and arranged for driving by stationary or portable engines. Single furrow ploughs, also two, three, and four furrow ploughs suitable for all kinds of work, and horse rakes and haymakers of most improved construction.

This week's notice may be concluded with a reference to class 54, which is devoted to machines and apparatus in general. The exhibits in this class embrace separate pieces of machinery—bearings, rollers, slide bars, eccentrics, toothed wheels, connecting-rods, cranks, parallel joints, belts, funicular apparatus, &c. Gearing, spring, and catch-work, &c. Regulators and governors. Lubricators. Machines for counting and registering. Dynamometers, steam gauges, weighing machines. Gauges for liquids and gas. Machines used for moving heavy weights. Hydraulic machines for raising water, &c.; norias (chain pumps), scoop wheels, hydraulic rams, &c. Hydraulic engines, water-wheels, turbines, hydraulic lifts. Accumulators and hydraulic presses. Steam-engines. Boilers, steam generators, and apparatus appertaining thereto. Apparatus for condensing steam. Machines set in motion by the evaporation of ether, chloroform, ammonia, or by a combination of gases. Machines set in motion by gas, hot air, and compressed air. Electro-magnetic machines. Windmills and panemones; and air balloons. Among the exhibitors may be noticed Messrs. John Bourne and Co., of Mark-lane, who show small horizontal engines working at a high speed, and developing a large amount of actual power. The high speed is rendered possible by the momentum of the reciprocating parts being balanced by counter-weights, and by the wearing surfaces being all of extra size to prevent wear. Messrs. Appleby Brothers, of Southwark, show a 5-ton locomotive steam crane to lift, turn round, alter radius of jib, and to travel by steam power, controlled by one man; wrought-iron carriage with springs and all appliances for running with goods wagons for railway purposes. A 5-ton portable steam crane, with horizontal engines to lift and turn round by steam for general purposes. A 10-ton overhead travelling crane, to work by hand or power, controlled by one man. A direct-acting steam lift, with safety apparatus and reversing gear, both self-acting. A wrought-iron warehouse crane, with direct-acting steam-engines and reversing gear. A steam pile-driving engine, with road wheels and shafts, the barrel worked by friction clutch. A horizontal winding and pumping-engine, self-contained on wrought-iron girders. A vertical winding and pumping-engine on wrought-iron frame. Donkey steam-pumps for feeding boilers. Vertical steam-pumps; 25-ton hand-power "Woolwich pattern" winch. Lieut.-Cols. Beaumont and Bolton, of Broad Sanctuary, Westminster, have an 8-horse power compressed air locomotive capable of drawing a loaded tram-car 10 miles on a road of average curves and gradients, without necessitating being recharged. Messrs. Gwynne and Co., of Victoria Embankment, exhibit their combined centrifugal pumping-engine with air-charging pump, complete, for raising wrecks, salvage purposes, surface condensers, drainage, and irrigation. Combined gas exhaust-er and steam-engine, for extracting gas from retorts, and passing through the purifiers, with regulator and gas valves. A small size gas exhauster, as above. Three ordinary centrifugal pumps, with all the latest improvements; the internal disc and shaft can be taken out and replaced in a few minutes. Two retort lids, for sealing the mouths of gas retorts instantaneously. A small turbine water-wheel.

One of the patent compound differential pumping-engines, which have been more than once referred to in the *Mining Journal*, is ex

hibited by Messrs. Hathorn, Davis, and Davey, of Leeds, who also show a patent hydraulic pumping-engine, for pumping water by means of water pressure (H. Davey, inventor). A patent differential steam-pump for general pumping purposes (H. Davey, inventor). A working model of compound pumping-engine, and a working model of hydraulic pumping-engine. Hadfield's Steel Foundry Company, Sheffield, exhibit crucible cast-steel castings for locomotives, marine, fixed, and portable engines, agricultural implements, rolling mills, forges, &c. Crucible cast-steel wheels for railway carriages (patented), tramways (patented), collieries, ironstone mines, slate quarries, lead mines, and so on. Messrs. Le Gros, Mayne, Leaver, and Co, of Queen Victoria-street, show their improved patent Ingersoll rock drill. A machine supported on tripod, or column or car, for boring or drilling holes in rocks for blasting in mines and quarries, operated by steam or compressed air. Ingersoll air compressor, a machine for compressing, driven by steam direct or by band or spur gearing. Messrs. Mather and Platt, of Manchester, have a sample of their patent ore stamper for stamping every description of ores, also phosphates and coprolites. This machine will stamp one ton of tin ore and more than one ton of quartz per hour, and requires only five indicated horse-power and 20 lbs. of coal to drive it. Messrs. May and Mountain, of Birmingham, exhibit three of Colebrook's patent direct-acting steam-pumps. One horizontal high-pressure steam-engine, with cylinders 7-in. diameter and 14-in. stroke. Hydrants and stand pipes for the extinction of fires and distribution of water. Steam cylinder lubricators; and a locomotive. The exhibits of Messrs. Tangye Brothers, of Birmingham, are very numerous including a patent horizontal high-pressure engine. Patent horizontal high-pressure engine, with vertical tubular boiler. Four patent horizontal "Soho" engines of different sizes. "Special" direct-acting 6-in. steam-pump. "Special" direct-acting compound condensing steam pumping-engine, with 13-in. double ram. "Special" direct-acting steam fire-engine, 7-in. pump. Improved vertical 10-inch air pump condenser. A set of galvanised tackle blocks as used in Her Majesty's Navy. London pattern rope blocks, 1, 2, and 3 sheaves, and snatch blocks of different sizes. Two patent wrought-iron hydraulic ship jacks to lift 35 and 100 tons. Patent hydraulic lifting jack to lift from 4 to 40 tons. Patent hydraulic locomotive traversing jack. An hydraulic carriage lifter. Bottle and tripod screw jacks. Single and double purchase windlass screw jacks. Bottle and tripod traversing screw jacks. Sets of Weston's patent differential pulley blocks for various weights. Hoisting crabs with brakes. A 3½ centre single speed lathe, &c. A 6-in centre double geared slide and screw-cutting lathe, and an 8-inch centre double geared slide and screw-cutting lathe with gap.

Cylinder linings made from a hoop of fluid-pressed steel and enlarged to size by being forged are exhibited by Sir Joseph Whitworth and Co., of Manchester, and the same firm also show an ingot of fluid-pressed steel in section. Ingot of steel not pressed, in section. Hydraulic cylinder made of fluid pressed steel to stand a working pressure of 4 tons to the square inch. And Messrs. Hayward Tyler and Co. exhibit a model of Cope and Maxwell's patent direct-acting pumping-engine; a new self-governing arrangement of the valve-gear of direct-acting steam-engines, which perfectly regulates the speed of the engine, securing absolute safety against accident from the running away of the engine in case of bursting of pipes, &c., cutting off the steam to secure expansion and utmost economy, and allowing the pump-valves to close gently at every stroke. Cope and Maxwell's patent "Universal" direct-acting steam-pumps, with outside steam valve applicable for all pumping purposes up to a height of 300 metres. For pumping to a height of 80 metres they are fitted with exhibitors' improved india-rubber ball-valves. Cope and Maxwell's patent "Universal" direct-acting steam-pumps, with outside steam-valve, suited especially for boiler feeding and for deep mines. Rider's patent automatic expansion steam-engine, with cut-off gear, controlled by the governor, securing extreme economy of steam and regularity of action under varying loads. Hayward Tyler and Co.'s donkey pumps for feeding steam-boilers, also their patent apparatus for preventing waste of water and waterworks fittings. Constant's patent packing. Rider's patent compression hot-air engine for pumping and driving machinery, securing perfect safety from explosions, ease of management by inexperienced persons, and economy of fuel. It should be mentioned that this is at work in a separate pavilion near the boiler-house.

FOREIGN MINING AND METALLURGY.

The Bochum Ironworks Company (Westphalia) has secured a contract for 13,000 tons of steel rails, to be supplied to the Royal Portuguese Railway. The execution of this order is to be spread over 2½ years. The contract price is 6*l.* 12*s.* per ton. Having regard to the period over which the contract is to extend, it would appear that the Bochum Works have little expectation of witnessing any improvement in quotations for steel rails.

The Belgian coal trade has exhibited little change. Contracts have been let for 36 lots, amounting altogether to 181,600 tons of coal required for the Belgian State Railways. The rates at which these contracts were let show a further reduction in prices as compared with the rates obtained at the letting of the last previous contracts in August, 1877. Belgian coalowners are beginning to ask, "What will be the lowest point to which quotations will descend?" The Carmaux (France) Mines Company is paying this month the balance of its dividend for 1877, or 2*l.* per share.

The French iron trade has not materially changed; orders are feeble in some districts, and ironmasters are endeavouring to reduce the losses to which they fear that they may be exposed by restricting production. In the Haute-Marne transactions are very limited; it is especially in ordinary iron of commence that business is effected with difficulty. In the Loire-et-Rhone group affairs also remain very quiet. Small purchases of iron have been carried through at Lyons at 7*l.* 4*s.* per ton, and upon this basis business has not presented much animation. A slight revival in affairs has, however, been noticed as regards plates. In the Meurthe-et-Moselle rough pig is disposed of tolerably regularly. Refining pig has made 2*l.* 10*s.* per ton. A fair amount of business has been passing in second fusion pig, and prices have been sustained. In the Nord orders are stated to have been received which are not altogether without importance, and prices have exhibited a slight tendency to improvement.

In the Belgian iron trade the attention of industrials has been a good deal directed to the Paris Exhibition, and business has been rather interrupted in consequence. The John Cockerill Company of Seraing (Belgium) exhibits a complete mill for rolling rails, as well as an engine for draining mines. MM. Dubois and François, of Seraing, exhibit a compressed air engine of 40-horse power. The administration of the Belgian State Railways exhibits a quantity of railway *matériel*. M. Chaudron exhibits apparatus for sinking mine shafts through aquiferous lands without draining off the water. We have no space in which to deal further with Belgian exhibits under this head, but, upon the whole, Belgium makes a very good show. A contract is about to be let at Brussels for 470 trucks, but no other large affair is in prospect at present.

The Parisian Company for Lighting and Heating by Gas has only now become relieved of certain contracts for coal concluded in 1872 upon rather onerous terms. The new contracts given out by the company have been let at much cheaper rates, and altogether the company expects to realise in 1878 a very sensible economy in the important matter of coal.

EXCITING SCENE IN A COLLIERY.—A terrible explosion was averted in the Boythorpe Colliery, at Chesterfield, by the prompt action of one of the deputies. Owing to the removal of the pillars in a portion of the workings, there occurred an extensive fall of the superior strata, which liberated a quantity of gas, estimated at 40,000 cubic feet. At the time of the gas escape a number of men were working in the southern henks with naked lights; but before the gas could penetrate to this part of the pit a deputy ran to the spot, and ordered all the lights to be extinguished. As he was returning to the engine-house the gas fired in his safety-lamp; and it is averred that if there had been a defective lamp in the pit the lives of all the men would have been sacrificed. There were nearly 400 miners in the workings when the deadweight shifted, and becoming aware of the liberation of the gas, they were seized with panic and rushed frantically to the bottom of the shaft. They were conveyed to the bank without injury; but nearly all the men left their clothing in the pit, and had to cover themselves with old sacks and any sort of apparel that came to hand before they could return to their homes. The men refuse to return to work until the pit has been examined; and Mr. Evans, Inspector of Mines, was expected yesterday to make a thorough examination of the workings.

MINING MACHINERY.

Two handsome quarto volumes descriptive of the machinery, tools, and other appliances used in mining* have just been completed by Mr. G. G. ANDRE, whose name is already known to the readers of the *Mining Journal* as the author of several valuable engineering works. Mr. André states that hitherto no descriptive illustrated treatise on the machinery used in mining has been published in the English language, and he adds that in his work on Coal Mining he had occasion to describe much of this class of machinery, and the descriptions were illustrated by drawings to scale; but it did not come within the scope of that work to treat the subject in its entirety, and the limits of space to which he was restricted forbade the adoption of a scale sufficiently large for every purpose; he has, therefore, deemed it desirable to supplement that treatise by the present. In this much of the same ground is necessarily covered a second time, but the descriptions in the present work are fuller, and the drawings are to a larger scale.

The first volume embraces three chapters on exploring machinery, excavating machinery, and hauling and hoisting machinery; in the first of these hand boring, machine boring, and special systems of boring are severally treated of. The excavating machinery described includes hand rock boring tools, machine rock drills, rock drill supports, air compressing machines, appliances for firing blasting charges, hand tools, the Kind-Chaudron shaft sinking machinery, coal cutting machines, and coal falling machines. In connection with hauling and hoisting machinery descriptions are given of tubs or wagons, tipping cradles, sheaves and pulleys, connections, cages, keps, head gear, ropes, horse whims, hauling engines, the winding drum, and winding engines. The second volume commences with the conclusion of the third chapter, referring to winding engines and man engines. The chapter on pumping machinery includes descriptions of various kinds of pumps, such as the differential pumping engines, Tangye's special, the universal, Parker and Weston's, the Niagara, the pulsometer, pumps for oil wells, water pressure engines, water wheels, and turbines. The fifth chapter, on ventilating machinery, refers, amongst other things, to handfans, Fabry's wheel, Lemielle's ventilator, Cooke's, Guibal's fan, Schiele's fan, Root's blower, anemometers, and safety-lamps. The concluding chapter, on machinery for the treatment of mineral products, is divided into three sections, treating respectively of crushing machinery, machinery for the preparation of gold and silver ores, and that for the preparation of tin, copper, and lead ores. Crushers, ore breakers, stamps, mortars, screens, dies, and stamps heads are each described. The machinery for gold and silver ores treated of is chiefly American, although some few others are also mentioned. For this class of work stamps, Rittenger's table, Australian stamps, grinding and amalgamating pans—Wheeler's, Hepburn and Petersen's, Wheeler and Randall's, McCone's, Patton, Wheeler modified, and Horn's—are each shown to possess some merit, and reference is also made to settlers or separators, agitators, the general arrangement of mills, and Collom's jigging machine. Jigging machinery is also referred to in connection with the treatment of tin, copper, and lead. In this connection Mr. André also mention Cornish stamps, Husband's pneumatic stamps, buddles, kieves, calciners, slime frames, pulverisers, and the Frue vanner.

The volumes are altogether admirably got up, as, indeed, are all such treatises which Messrs. Spon issue, and the amount of information brought together is considerable. Most of the machines and apparatus described are well known to the readers of the *Mining Journal*, and their merits have been in almost every case tested, so that the study of the drawings to scale which Mr. André supplies will be of especial interest, and the work will doubtless be extensively circulated and appreciated.

* "Descriptive Treatise on Mining Machinery, Tools, and other appliances used in Mining." By GEORGE G. ANDRE, F.G.S., &c. Two volumes. London: E. and F. N. Spon, Charing Cross.

THE MINES AND MINERALS OF ARIZONA—No. II.

Commencing at the north-eastern extremity of the silver and gold belt we find the mines of Cerbat not equal to those of some districts in the breadth of their veins nor to others in the richness of their ores. Some ores are free milling, and others require smelting or roasting. With 2 or 3 ft. veins ranging in yield from $100 to $500 per ton, in a country abounding in the main accessories to successful mining, plenty of wood and water, and at an elevation which ensures a bracing healthy climate, free in general from exhausting heat, and only cold enough to give a zest to existence, the mines of the Cerbat range ensure a rapid growth not only of facilities for mining itself but of the means for realising the comforts of every day life, and consequent facilities for social and domestic relations which are too commonly wanting in most mining regions. In Mojave county is one of the great lodes of the mineral world, and the McCracken Mine will shortly be producing $75,000 to $100,000 a month. Its ores are richer than those of the Comstock, that nets $4,000,000 to $6,000,000 profit per annum. The Signal Mine, immediately adjacent, is estimated to produce at present about the same as the McCracken, its capacity being limited only by the same causes—the number of men employed. It now produces 60 tons of ore daily, which can easily be raised to 100 tons. The aggregate product of the mines in Mojave county is reasonably estimated at $200,000 per month for some time past, with a definite prospect of $300,000 per month in the current year. Just across the Bill Williams river, in Yuma county, within 10 or 12 miles of the McCracken, are the Planet Copper Mines, concerning the product of which no data are accessible.

The Yavapai mining country also contains some rich mines, and the western Yavapai mining region is extending eastward near the Maricopa line, on both sides of it, commencing with Cave Creek, a tributary of the Agua Fria; next to which come the new mines on the Verde river; then the new discoveries on the Mazatzal range, and, lastly, the rich mines in the Tonto basin, which are not far north of the immensely valuable mines in the Apache, Pinal, and Superstition Mountain. Chief among these are the Stonewall Jackson and Silver King Mines; one piece from the former, found in October last, weighed 559 lbs., and contained 80 per cent. silver, and a lot of selected ore from that mine gave 60 per cent. to 70 per cent. of silver. Its vein is very narrow, but never broken. Many neighbouring mines are equally rich. In the Globe district many of the ledges lie in limestone, and all of them run with the formation and not against it. The silver ores are mostly combined with sulphur. Rich specimens of chloride, bromide, and iodide are found at the surface, but gradually this character of ore disappears, and antimonial sulphurets are found instead, proving the ores to be very rebellious. In this district a man is said to have bought a hole 57 feet deep for $120,000, and got his money back in 60 days.

The history of coal explorations and discoveries in Arizona is one of peculiar interest, and the recent extensive discoveries of coal in the territory were alone wanting to make Arizona without its peer in the United States as regards a combination of mineral, agriculture, and other natural gifts. From Lieut. Wheeler's report of explorations in 1871 it appears that prior thereto Dr. Newberry had discovered indications of coal on the Colorado Plateau; and Lieut. Howell says that if (the doubt has since been removed) the thick beds of lower cretaceous coal reported by Dr. Newberry belong to this same horizon then the lower cretaceous coal of the Colorado Plateau system it is the most extensive known. Coal was seen by members of that expedition on the north fork of the Virginia river, near the north-west corner of the tertiary strata; on the west fork of the Paria, near Paria, Utah; 25 miles west of Oraybe (one of the Moqui villages), at the mouth of a little canyon (110° long., 36°20′ lat.), there is a bed of pure coal 8½ ft. in thickness, and a little farther down the canyon a lower bed 4 to 5 ft. in thickness: 2 or 3 miles north one bed 25 ft. in thickness, supposed to be the same mentioned by Dr. Newberry; there were also seen at the Moqui towns and east of Mount Taylor "enough to indicate that the bed continues with greater or less thickness to the valley of the Rio Grande. The coal beds are included in the shale; whenever there shall be a market coal will be developed in all the indicated areas of cretaceous outcrop." A coal opening was also seen 16 miles north of Camp Apache; four seams of coal, 4 ft. to 5½ ft. thick, were seen 12 miles west of Fort Wingate, New Mexico, and again at the north-west slope of the White Mountains. Some distance to the southward of this last is the coal region of Arivaipa canyon, recently discovered by Messrs. Kohlmeyer and Blackburn, which has been laid off into five claims of 320 acres each. These strata are horizontal, in a sandstone formation, and when the railroad reaches the vicinity the coal here (evidently anthracite) will be invaluable for mining and manufacturing developments in Pinal, Maricopa, and Pima counties. A vein of good coal is said to have been discovered about 50 miles from Mesilla. More anthracite coal is reported "in the near neighbourhood with silver mines in the hills of the Salt River Valley," of which a mass is said to have been exposed 120 ft. in width and a mile in length, but no more definite location is stated.

Equally interesting particulars concerning other districts and other mineral productions of Arizona might be selected from Mr. Hinton's book, but these will suffice to show the enormous mineral wealth of the territory, and those disposed to pursue the subject further can consult the volume itself.

* "The Hand-Book to Arizona; its Resources, History, Towns, Mines, Ruins, and Scenery." By RICHARD J. HINTON. San Francisco: Payot, Upham, and Co. London: Trübner and Co., Ludgate Hill.

MINERAL WATER MACHINERY.—A complete explanatory catalogue of machinery for the manufacture of soda water and all other kinds of aërated and artificial mineral waters has just been issued by Messrs. HAYWARD TYLER and Co., of Whitecross-street, London. Ample information is given to enable intending purchasers to select their machinery, so as to secure the best possible results, and the utmost economy in its production. There is an interesting general notice of soda water machinery, and another on the properties of carbonic acid and its combination with water. The origin of soda water is fully discussed, and there are excellent notices of the present state and future prospects of the soda water trade, and of the contamination of aërated water and its prevention. A large quantity of machinery is described and illustrated, so that whatever may be the requirements of the purchaser he will have no difficulty in suiting himself exactly.

PRESS MANUAL.—Although there can be no question as to the necessity for advertising in order to keep a business in a prosperous condition, it is equally certain that much money may be uselessly expended in this direction through want of proper consideration and assistance in the selection of the newspapers and periodicals specially adapted to the advertisements to be published. With a view to prevent this Messrs. C. H. May and Co, the advertising agents, of Gracechurch-street, have just issued their Press Manual for the current year—a classified and explanatory list of the various newspapers published throughout the kingdom. This is an admirable list of London, Provincial, Welsh, Scotch, and Irish daily newspapers, and complete lists of London papers; of district and suburban papers; and then of newspapers published in other parts of the kingdom, arranged according to the counties. The list is altogether a very valuable one for advertisers, and as the price is merely nominal it should be generally consulted.

CASSELL'S PUBLICATIONS.—The usual monthly delivery of the works publishing in parts by Messrs. CASSELL, PETTER, and GALPIN give evidence of the same amount of care as heretofore being exercised upon their production. The first number of the Magazine of Art gives promise that the complete work will be a very attractive volume. It is remarked that in it the theme of art will be enlarged upon by presenting conceptions of a higher order, carried out by more subtle skill: art which provides not merely what is agreeable to eat, soft to wear, or convenient for daily uses, but recreation and enjoyment as well as culture for the mind. These conceptions, clothed by art, are properly called fine arts; and it is with a view to providing the largest number of persons possible with the means of participating in the incomparable advantages and pleasures which art can confer that the Magazine of Art has been projected. The time at which the magazine will make its appearance could not be more opportune, concurring as it does with the opening of the Paris Universal Exhibition, the treasures of which will contribute largely to its pages. The most careful selection will be made of those objects which are of the greatest general interest, and are most worthy of being permanently recorded.——The fourth part of Great Britain contains an excellent portrait of Sir Titus Salt, and a good view of the mill at Saltaire; the continuation of the description of the Cotton Industry; a portrait of Arkwright; and No. 2 of Mr. Smiles's Model Establishments, which refers to the Royal Army Clothing Depot at Pimlico.——Science for All has an interesting article by Mr. C. W. Cooke on Optical Illusions, and another on Nerves or No Nerves by Dr. A. Wilson, which are well worth reading; whilst Mr. Hepworth contributes a paper on the telephone.——The May part of Knight's Dictionary of Mechanics extends from Centre-pin to Chromatic printing, and is printed in the usual excellent style.

ROYAL CORNWALL POLYTECHNIC.—The forty fifth annual report of this society—that for 1877—has just been issued, and, in addition to the usual details relating to the progress and position of the association, contains descriptions of machinery and abstracts of lectures. The notices of machines include brief descriptions of the Rider compressor engine, the Ingersoll drill, the hydrotrophe, the patent steam sentinel safety-valve, Vosper's triple drill for boring three parallel holes at once, the Warsop light forging hammer, of a paper carpet for rooms, Warrington's patent fountain-valve, the Hathorn air-compressor, and many others. Among the contributions to the Falmouth fauna and flora, by Dr. W. P. Cocks (aged 85¾ years), were a curly-tailed cat, and many other curiosities, to which full reference is made. The abstracts of lectures embrace the Telephone, by Mr. R. N. Worth, F.G.S.; Napoleon Bonaparte, by Mr. G. O. Trevelyan, M.P; and State Education, by Miss Orme. The price of the report—2*s.*—places it within reach of all, and there are few who will not be able to learn something valuable from it.

SOCIETY OF ENGINEERS.—The volume of the Transactions for 1877 has just been issued (London: E. and F. N. Spon, Charing Cross), and, in addition to the President's address, contains seven valuable papers on various subjects. Mr. J. W. Pearse contributed a very interesting memoir on the mechanical firing of steam-boilers, which gave rise to a discussion, in the course of which a very large amount of information was elicited; this was one of the papers to which the council awarded a premium of books. The priming of steam-boilers was very fully discussed by Mr. William Major, and Mr. P. B. Björling contributed a paper on direct acting pumping-engines, which was followed by an interesting discussion. Direct acting hydraulic machinery formed the subject of a valuable paper by Mr. Ralph H. Tweddle, which was another of those to which a premium was awarded. Mr. G. W. Usill dealt with the question of rural sanitation, and, in concluding his paper, remarked that fresh air and pure water in a cheerful dwelling will do more to advance the welfare of the labourer than any thing else. A lengthened and thoroughly practical discussion followed the reading of this paper. The two remaining papers were on tube wells, by Messrs. Le Grand and Sutcliff, of Bunhill-row, and were thoroughly business papers, their object being to describe the tube-wells supplied by the firm. The value of the communication to intending users of these apparatus is considerable, and the council showed their appreciation of this by awarding Mr. Le Grand one of the premiums of books; an animated discussion followed the reading of the papers. The volume is edited by Mr. P. F. Nursey, the secretary, and is admirably printed and illustrated; so that it will, like its many predecessors (for the society has now nearly completed a quarter of a century of existence), form a useful addition to the professional man's library.

THE SCOTCH MINING SHARE MARKET—WEEKLY REPORT AND LIST OF PRICES.

During the past week the increasingly serious nature of the political situation has kept business entirely in check, though it is noticeable a buoyant tendency at once prevails whenever there is an absence of adverse news. A little improvement may be noted for the last day or two, being the opening of the account for settlement May 16. Particulars of the continuation business done at last settlement are given below. Wednesday, May 1, was observed as a general holiday according to custom.

In shares of iron and coal concerns Bolckow, Vaughan, A, have declined 5*s.* per share, and Scottish Australian 2*s.* 6*d.* Chapel House shares easier at 43*s.* 9*d.*, and the 7½ per cent. debentures unaltered. A meeting of the Crown Preserved Company is called for the 6th inst. Bolckow, Vaughan, A, would yield 6¼ per cent., and Muntz's Metal 6½ per cent., on investment at present prices. At the meeting of John Bagnall and Sons the shareholders almost unanimously opposed the scheme for reducing the capital from 300,000*l.* to 192,000*l.*, and a committee has been appointed to confer with the directors. Richards and Company (Limited), the wholesale coal merchants at Cardiff and Swansea, with agencies at most of the principal shipping ports here, and also in France, Portugal, the Mediterranean, and on to India, are issuing 2300 additional shares of 10*l.* each at par. Half of them have been taken up already, as they are guaranteed minimum dividends of 10 per cent. till 1879. The capital already issued is 71,280*l.*, on which regular dividends have been paid since the company's formation in 1874, the profits earned being in excess of the 10 per cent. dividends. Beverley are at 80*s.* Bolckow, Vaughan, A, 54 to 54½. Charles Cammel and Co., 9 dis. Chillington, 55*s.* Henry Briggs, A, 12½. John Bagnall and Sons, 42*s.* 6*d.* Newport Abercarn, 60*s.* Rhymney (new), 5. Scottish Australian, 32*s.* 6*d.* to 37*s.* 6*d.* Sheepbridge, 18½ dis.; ditto (new), 8¼. Staveley, A, 18½ prem.; ditto, C, 78½. Thorp's Gawber Hall, 53*s.* 9*d.* West Cumberland, 8. West Mostyn (pref.), 25*s.* Workington, 12¼.

In shares of foreign copper and lead companies Rio Tinto 5 per cents. have been done at a slight advance, while Cape are reduced 10*s.* Both classes of Tharsis shares are now quoted ex div., and an advance would be given for the 7*l.* paid shares. The report to be submitted at the Rio Tinto meeting, on May 7, shows a deficit for 1877 of 62,721*l.* on the revenue account. The total amount of 5 per cents. cancelled to date is 164,060*l.*, making the amount outstanding 2,016,940*l.*, and there is 945,280*l.* of 7 per cents. also outstanding. Hultafall are at 80*s.* New Quebrada, 30*s.* Yorke Peninsula, 5*s.*

In home mines lead shares attract the bulk of the small business passing. The prospects of Cambrian appear to be good. The deep workings of Grogwinion appear to open out exceedingly well. The general appearance of Red Rock is good, further discoveries being reported in the eastern workings. It is expected the Tin-y-Fron Company will not require to issue over 7000 shares, and will pay dividends on that amount in place of 10,000 shares. Bampfylde are at 5*s.* Combmartin 6*s.* Great Laxey, 18½ to 19½. Gunnislake (Clitters), 17*s.* 6*d.* Killifreth, 1*s.* 3*d.* Rhosesmor, 30*s.* to 35*s.* Rookhope 18*s.* to 20*s.* Van Consols, 7*s.* West Combmartin, 10*s.* West Tankerville, 9*s.* to 11*s.*

In shares of gold and silver mines Richmonds are steady, on the dividend of 7*s.* 6*d.* per share, declared payable on the 7th inst.; the week's run is $30,000. The profit of St. John del Rey for March is 8400*l.* Almada and Tirito have no profit for the same month, but both furnaces are now working. The Don Pedro permanent pumping machinery has begun to pump water from the 35; the produce for the first division of April is 1450 oits. The returns of the Tolima Company for February are estimated at $9577, at a profit of $1301, or 126*l.*; 36 days washing had produced 56 ozs. of gold, estimated at about 219*l.*, but the weather had been very dry. Cedar Creek are at 5*s.* to 7*s.* Chicago, 27*s.* 6*d.* Colorado United, 4½*s.* to 5*s.* Eberhardt, 6. Emma, 1*s* 6*d.* Exchequer, 2*s.* 6*d.* Flagstaff, 10*s.* to 15*s.* Frontino, 37*s.* 6*d.* I. X. L., 2*s.* 6*d.* Javali, 6*s.* Rossa Grande, 2*s.* to 4*s.* Santa Barbara, 24*s.* South Aurora, 2*s.* 6*d.* to 5*s.*

Shares of oil companies easier, and Young's Paraffin and Uphall each 1*s.* 3*d.* lower. Price's Candle are at 10½ to 11, yielding 7¼ per cent. to the investor at these prices. Shares of miscellaneous companies neglected. Earle's Shipbuilding 22½ dis.; Hopkins, Gilkes, and Co., 9¼ dis.; Palmer, A, 13¾; ditto, B, 15½. In wagon shares, Scottish are 1*s.* 3*d.* lower, at 11, sellers; Lancashire 12½. In chemical companies, Newcastle are lower at 35*s.* to 40*s.* on a call made of 1*l.* per share payable June 29; as there are 60,000 of these shares the capital thus raised should be as many pounds. The company can call up other 2*l.* per share. Langdale's also easier at 9*s.* 6*d.* to 9*s.* 6*d.*; Lawes' 7 per cent. (pref.) are wanted, and the ordinary shares are better at 7¾ to 7¾.

In the Journal of April 6 we stated Tharsis old or new shares would either yield about 9 per cent., distinctly prefacing this calculation as being based upon the last average yearly dividends. The old shares were then, making a very moderate deduction for accrued dividend, 22*l.* each, and anyone can see that at this, with a 20 per cent. dividend, the yield is fully 9*l.* 1*s.* 3*d.* per cent., thus our statement was well within the mark, and intentionally so. "Accountant" in a letter in the Journal on April 13 states this is not the case, evidently intending to show we were misleading the public regarding the concern, thus to discredit the favourable opinions we have been expressing about it, as he makes it the object of a vain attack. In the following week's Journal we explained the error he had fallen into concerning our calculation, at the same time showing the incorrectness of a calculation supplied by him, but based on the 17½ per cent. dividend, which, though then recommended, had not been declared. With what result? Without plainly avowing the evident intention referred to above, he neither excuses the mistake he made in impugning the correctness of the report by carelessness or ignorance, and the reference to this matter in his letter in last week's Journal is the best proof of the manner in which he suppresses information that does not suit his purpose. He makes the matter appear in such a light as if he was not wrong at all, or only so slightly as to be of no moment. We now see it was useless to expect such an "Accountant" to honourably retract the unjust accusation that our report was misleading, and will in future treat any remarks of his regarding the Tharsis Company, or anything else, with the silence which they deserve.

On Contango day the following were the rates of continuation current:—Contangos: 1d. on Glasgow Caradons, 1d. on Port Washington, 1d. on Huntington, 2½d. on Marbella, 1d. on Monkland Iron, 6d. on Richmond. Backwardations: 10½d., 1*s.*, 1*s.* 6*d.* on Tharsis, 4½d. on Uphall Oil, 6d., 4½d. on Young's Paraffin. On comparing the making-up prices for the following shares fixed to-day with those at the previous settlement, the variations which have occurred during the

account bear witness of the restricted and comparatively unimportant business transacted, and are as follows:—Tharsis have advanced 7s. 6d. per share, ditto (new) 5s., and Huntington 1s.; while Ulhall have declined 3s. 9d., Richmond 2s. 6d., and Glasgow Caledonian 6d. The following are unaltered:—Canadian Copper, Port Washington, Marbella, Monklands, Omoa and Cleland, Oakbank Oil, and Young's Paraffin.

J. GRANT MACLEAN, Stock and Share Broker.

Post Office Buildings, Stirling, May 2.

FOREIGN MINES.

ST. JOHN DEL REY.—Telegram from Morro Velho, dated Rio de Janeiro, April 23 (delayed -line interrupted): Profit for the month of March, 8400*l.* — Telegram from Morro Velho, dated Rio de Janeiro, April 29 (line interrupted): Produce eleven days, second division of April, 12,750 oits.=4940*l.*; yield, 5·6 oits. per ton = 7 oits. by old measurement.

DON PEDRO.—Telegram from Rio, dated April 24: Permanent pumping machinery has commenced to pump water from the 35 fm. level. All's well. Produce cleaned up (first division of April), 1450 oits.

RICHMOND CONSOLIDATED.—Telegram from the mine at Eureka, Nevada: Week's run, $80,000, from 1030 tons of ore. Week's produce of refinery, $60,000.

— R. Rickard, April 11: Since my last there is no change of importance in the mine. The 200 main drift is being extended on the quartzite. At present the contact between quartzite and lime-tone is close, and without any ore. The stope in the same level is turning out some good ore, and the ore in the bottom of this level is looking well. The 400 main drift is in hard limestone, with occasional bunches of ore. The winze below this level is down 58 ft.—the bottom is still in ore. We have been obliged to suspend sinking until we have put in air-pipes and a fan; this will be completed in the course of a week, when the sinking will be resumed. The winze being sunk from No. 7 chamber is sunk on an incline 40 ft., in very good ore. All the stopes are opening out well, and producing good ore. There is no falling off in any of the stopes. All other parts of the mine are without any change since my last. The three furnaces are in good working order, and smelting their usual quantity of ore.

— The directors have declared a dividend of 7s. 6d. per share. The furnaces which were started on Sept. 5 continue in good working order, smelting weekly upwards of 1000 tons of ore. It is not intended to shut them down for some time, as in consequence of their good condition and the facilities afforded by the railway for the conveyance of ore and fuel, it is not necessary to do so. The accounts for the past year have been made up at Eureka, and are expected to be received in London in the course of a few days, after which the yearly balance-sheet will be prepared and submitted to the shareholders as soon as possible. Since the starting of the furnaces the directors have paid 40,500*l.* in dividends, and 12,800*l.* on account of debentures; and pending the preparation of the balance sheet showing actual realisations, the directors consider it advisable to divide only 7s. 6d. per share, leaving the surplus to be dealt with hereafter. The reports from the mine as to the developments continue to be most satisfactory. Although the reserves of ore have been so largely drawn upon since the starting of the furnaces in September last, the quantity in sight is as great as ever. Explorations have been carried on energetically, as shown by the weekly letters of the manager; and between the 200 and 400 ft. levels large bodies of high grade ore have been opened out. The directors are informed that the report of the committee of investigation is in the hands of the printer, and that it will be forwarded to the shareholders with as little delay as possible.

ALMADA AND TIRITO CONSOLIDATED.—Telegram from Mr. Breach, dated April 10: No profit for March. Both furnaces working. Tunnel 7 fms. from Soledad. No change underground.

TOLIMA.—The advices report the estimated value of the returns for February at $9577, and the expenditure at $8275: leaving a profit of $1301, equal in sterling to 216*l.* The agent reports 42 fms. 1 ft. of ground expended, of which 15 fms. 5 ft. 9 in. were unproductive: leaving 26 fms. 1 ft. 3 in. of productive ground. Notwithstanding the prevalence of drought, the gold washing in 36 days has produced 56 ozs. 9 dwts. 12 grs. of gold, estimated at about 219*l.*

COLORADO UNITED.—This morning's advices (April 29) state:—1. The sales of ore during March amount to $18,797·9.—2. On March 12 the Union Tunnel cut into the Terrible lode; mineral about 7 in. solid, from which we have taken about 2 tons of mineral, rich in grey copper, and streaked with ruby and brittle silver, making nearly 1 ton to the fathom.—3. The Silver Ore Tunnel is now in 839 feet. The superintendent says—"The surveys completed the early part of the month (March) proved that we must now be very near the Brown lode, and I think we shall intersect a very rich vein of mineral within another 30 ft."—4. On April 3 the 7th level was connected with the Silver Ore shaft, and with the heading of the Union Tunnel the next day. The superintendent says—"The vein is looking very well, and I shall put up a tender to run 100 ft. west on the lode; we shall here have a magnificent stope in reserve."

PROVIDENCIA AND NEW ROSARIO.—Extracts from M. V. Cumins' letter, March 28: San Miguel Winze: The winze has now been sunk about 16½ varas. For the first 10 varas the lode improved considerably, yielding for a few days 8 and 9 cargas a day of good ore; then we had a sudden and rapid change, and for about 6 varas the lode was as poor as it could possibly be. In the last 1½ varas there has been an improvement, and the lode has been yielding about 1½ to 2 cargas of ore a day. The ore is very poor as yet, but it is becoming thicker throughout the lode, and if the improvement continues we shall shortly have payable ground. San Miguel north end is now driven 84 varas 90 cts. from the shaft, and we have commenced a cross-cut east; it has been driven already rather more than 1 vara through very sparry horse or country, and it is possible that we shall not drive far before we intersect the first lode. Dr. Eveleigh's cross cut has now been driven about 11 varas. The country is very sparry indeed, and begins to give indications of our being near a lode. The extraction for the fortnight amounts to 28½ cargas of aquazado, worth about 7 marcs per monton. Owing to two feast days the extraction is 7 or 8 cargas below what it would otherwise have been.—Hacienda: We have about 100 cargas of ore ready towards the formation of another torta.

EBERHARDT AND AURORA.—F. Drake, April 6: I can well imagine something of the deep interest, the great anxiety even, that continues to be felt by the board and every member of the Eberhardt and Aurora Company concerning the final result of our explorations. For my part, as the weeks come and go and the months flow on, and my communications to your office are forwarded, it is exceedingly trying to me in not being able to report some striking development—some important discovery of ore. Indeed, for us all it is in some degree a question of endurance; but as ever, I am still firm in the belief that we will yet find ore that will compensate for all our efforts and reward the company for so long and patient a waiting. And among my reasons for the hope that is within me, I will state that the indications in the mine for a continuance of ore are indeed favourable, though how long they will continue I of course cannot now say. The ore broken in the past week is of a higher grade than that of several weeks previous, and somewhat more in quantity; in fact, the ore is holding out much beyond our expectations, and at present really promises better for a continuance than it did 12 months ago. Another pleasant thing about it is we are weekly adding to our stock of broken ore, and, as already mentioned, the quality is an item for encouragement. I have no doubt this ore will fully pay not only its working, but also all our current expenditure in the mine.—Tunnel: Considering the terrible hardness of the rock during the month of March the progress made was, indeed, most creditable to the management and energetic perseverance of the contractors having the work in hand. They did all that any set of men could do to make their work a success, but they nevertheless lost heavily. They pushed on, however, hoping, and knowing I may say, that such exceedingly hard and difficult rock must soon change to something softer. The ground during the past week has broken considerably better, and the improvement is shown in the increased number of feet driven, they making 53 ft. as against 45 ft. and 43 ft. run in the two weeks previous. The rock at present is mainly lime and spar, but shows more stratification. The winze from the John Wild north drift is down 28 ft. in the ledge matter, but we found nothing encouraging. I have, therefore, stopped this work and put the men upon the good showing of quartz in the raise. You will observe in my weekly reports that we have drifted from the raise northerly 19 ft. The drift is almost entirely in a good character of quartz, but of low assays. I have now resumed raising on this quartz, and hope to find an improved quality of it. It scarcely seems possible that so good-looking quartz can continue throughout its entire body without some portion of it being pay ore. Such a thing is certainly not known at Treasure Hill; I, therefore, think our prospects for ore favourable.——Hauling: If the road to the North Aurora Mines becomes dry by the 1st proximo I propose to then commence hauling ore to the mill. The snow has now mainly disappeared around us, except the old drifts on Treasure Hill, and around the tops and down the northern slopes of other high mountains.

BIRDSEYE CREEK.—G. S. Powers, April 8: I have just cabled you the following:—"Cleaned up a run of 35 days; gross, $8500; profit, $2000." This includes the partial clean-up of $2965 made about the middle of the month, as per my letter of March 25. We have not been able to clean in any bottom in Neece claim, owing to the continual caving of the top, caused by the explosion of so much powder since the washing commenced along the entire face of the bank, which will explain the light returns for this mine. Red Dog is paying a light profit, but we cannot expect to improve much until we get farther back into the original channel, as explained in a previous letter. We cleaned up 67 ozs. at Waloupa, and as we had run but a few days through the new shaft—say not to exceed six days of 24 hours—with a small head of water of about 450 inches, I am confident we are on the right channel, and it will only require a short time to make this claim the most profitable of any of the company's mines now being worked. The rock is still pitching, and we have not bottomed any of the deep channel, and may not be able to until we get our tunnel extended 50 or 75 ft. further, which we are now driving as fast as we conviently can.

CEDAR CREEK.—J. A. Stone, April 13: Central Claim: The second clean-up produced $5654·66, which is quite satisfactory. The flume has been re-blocked, I am again washing, with good prospects of the third clean-up being equally as good as the second.—Baker Claim: I have cleaned up the lower portion of the flume, which was left when I cleaned the head, and realised $347·28, making the total amount produced by the first run $5426·21. I have the second blast well under way in washing. While cleaning up the lower portion of the flume I put up the derrick, and find it a great saving of powder and labour, besides which I can wash more hours each day. I have contracted to have powder drifts driven for another blast, which will be ready by the time the present blast is washed off.—Ditches and Water: We have been quite lucky with the ditches so far, having had but one break to delay us. There is due from customers for water in the neighbourhood to April 1 of $5000. I expect soon to collect a portion of the above amount, as they are about making their first clean-up. The water supply gives promise of lasting until about August 1.

BLUE TENT.—D. T. Hughes, April 6: We have had a splendid stream of water through our ditch during the past week, and washing successfully in all the claims. Cleaned up at Blue Lead on the 2nd, and resumed washing the following morning; our prospects are favourable for our next run to be equally as good as the last. Working a large force at South Yuba, and still have a large quantity of pipe-clay to break up, this clay being slippery, and with the assistance of the sprays of water from the pipes oozes over, together with the ground on top of it, and preventing us from washing but very little of the bottom gravel since we set off the blast. We have quite a large space of bottom uncovered, and hope to be able to wash a portion of the same very soon. Washing at Gopher, as before reported, with but a few men.

MINERAL HILL.—Mr. Plummer, April 6: Queen Tunnel: Progress during the week, 5 ft. Yesterday we cut a small quantity of chloride and lead on the western side of the tunnel—a small deposit of only a few pounds, but it was cheering to see even this after passing through so much dead ground, and we hope it will lead us to a large deposit.—Star Mine: We have broken some good ore here during the week; we are now following a small body we found on the east side of the chamber. The body on the south and west is getting beyond our reach to work from the chamber; we are, therefore, making a communication from the South Giant Mine to get this ore with greater ease, and I am pleased to state that in making this communication we have cut ore, so that our exploratory work in this direction will pay for itself, and when completed I think we shall break a great deal of ore at much less expense than it has cost us hitherto.—Troy Winze: In this winze we are cutting through the quartz, but as yet without results of any consequence.—Western Stope: The branch reported as existing in the South Troy Mine is opening out under development, and we are getting ore in saving quantities. We have during the week broken about as much ore as usual—something like 10 tons, and, generally speaking, the mine looks better at present than I have yet seen it look. I have reduced the number of men in our employment, and have now only 14 in all. The Queen tunnel is again set for the month at $12·50, to pay for tramming and all costs.

MALABAR.—G. B. O'Reilly, March 18: Clean-Up: This operation was concluded on the 16th, and the invoice is now sent, amounting to $1508·20, a result which, although nearly covering cost, is below what I had anticipated. I do not, however, attribute the low rate of our return to any falling-off in the gold contents of the gravel washed, which we have every reason to consider remains unchanged, and our next run will no doubt do much better. The low produce is due to the fact that fully 200 hours of the work was expended on a very poor corner of ground, consisting principally of sand, which it became necessary to remove in order to open out a space for the monitors, where they might be safe from accident. It must be also noted that we were unable to run off the greater part of the bottom ground from the occurrence of a ledge of granite in the bed-rock, which cut off our grade at the head of the ground sluice, an obstacle which we shall remove in a few days by blasting a cut through the rock. When this is effected we shall have command of the bottom, and will run off the stuff now accumulated, as this contains much of the gold which should have figured in the present run.—Water Supply: The long-continued drought has to some extent affected our working power. We have been on an average 200 in. short of our normal quantity, which deficiency must tell to some extent on the returns.

MALPASO.—W. S. Welton, March 19: Run No. 44, from Feb. 20 to March 16, during which time washing was carried on for 454 hours, has produced 91·75 ozs. gold, valued at $1697·37 (340*l.*) The estimated cost for the above period is as follows:—Running cost, $1450·80; new ditch extension, $600; new opening, $150= $2200·80 (375*l.*) During the present run very little dirt was wheeled into the sluice, as we have now reached ground covered with ricks from former runs; and, taking into consideration this circumstance, the produce from the gravel may be considered equal to that obtained during the last few runs. At our present point of operations the bank continues to hold out, and we may reckon upon similar returns to the present for some months to come.—New Ditch Extension: We have now got all the timber cut and prepared for this work, and the ditch graded and opened to carry 1000 inches of water. Our stock of nails have failed, and not having been able to obtain any quantity 3½ in. nails in Honda, or at any of the mines, I shall suspend this work for the present, and employ the sawyers and carpenters in cutting timber and making sluice for the new opening.—New Opening: During the month I have been running all the water and tailings from the mine through the new opening or along its course, confining the water as much as possible to one channel by means of poles and brushwood. In this manner I have succeeded in running off a large quantity of old tailings, but I find that it will be necessary to put in a sluice to prevent the lower portion of the cut from filling up and backing up to where we are working. Timber is now being cut for this. With the aid of a sluice I think the new opening can be got up to where we can work with the machine in about six months from this. I have had all the forest and brushwood cut down in the neighbourhood of the new opening, and at the point selected for piping, so as to be able to burn off as much as possible before commencing operations, and to get a good view of the ground to be operated upon.

VIRNEBERG COPPER.—R. K. Roskilley, April 30: Hadley's Engine-shaft: In the 140 metre level, south of shaft, we are busily engaged in cutting through the lode, which so far as cut into has a very promising appearance, and is yielding good stones of copper ore. The lode in the stope in the back of this level is producing dressing work for copper, and indicating an improvement. The lode in the 120 metre level, driving south of shaft, is within the last week much improved for copper ore, it being 4 ft. wide, and worth 20*l.* per fathom—a fine-looking lode. In this level, driving south of rise on the footwall, the lode is producing fine stones of copper—a kindly lode. The lode in the stope in the back of this level is worth 10*l.* per fathom. The lode in the stope in the back of ditto, north of shaft, is also worth 10*l.* per fathom for copper and blende. In the 90 metre level, north and south of rise, very little has been done during the past fortnight, in consequence of six of the men having been employed in repairing the rise above the 100 metre level, meanwhile the other six men have been engaged in clearing and securing a rise in the back of the 120, south of this point, with the object of meeting with the lode of copper ore still standing in the 90 metre level. This rise is just communicated with the same, but it will take some few days more to repair the level, so as to enable us to report fully on the lode. In clearing the rise we have met with some very fine stones of rich copper ore. We are pushing on the dressing of another parcel of copper ore, and the dressing machinery is in good condition, and working well.

CAPE COPPER.—The Spectakel and Trial Mine reports for March are received. Of Spectakel the report says—"The 36 east from flookan course has slightly improved during the past month, and is now worth 4 tons per fathom." Returns for the month: From Spectakel 11 tons, and from Nababeep 13 tons.—Arrivals at Swansea: The Tacna and Hidalgo.—Bills of Lading Received: 34 tons of ore per Walmer Castle (s), 425 tons per Florence, 435 tons per Pathfinder, and 460 tons per Alonza.—Sale by Tender on April 24: 340 tons, at an average 12s. 1½d. per unit, realising approximately 790*l.*

LUSITANIAN.—April 23: Palhal: Levels on Basto's Lode: The lode in the 200, east of Taylor's, is 2½ ft. wide of quartz, and there is a rib of ore on the north wall. The lode in the 200, west of Taylor's, is worth 1½ to 2 tons per fm. The lode in the 190, east of Taylor's, is from 4 to 5 ft. wide, of quartz, and the ore is worth ½ ton per fathom. The lode in the 180, east of Taylor's, is 4 ft. wide, composed of quartz and stones of ore. The lode in the 150, west of Taylor's, west of the slide, is from 6 to 12 in. wide, of quartz, with orey stones in it, also specks of lead.—Stopes on Basto's Lode: The lode below the 200, east of Taylor's, is worth ½ ton per fathom. The lode in the two stopes above the 200, east of Taylor's, are each worth 2 tons per fathom. In the two stopes below the 190, west of 109 winze, the lode is worth 3 tons per fathom in the ends of the ground, but is not so good in the bottom. The lode above the 200, west of 109 winze, is worth 1½ ton per fathom. Above the 28, east of 17 winze, the lode is worth 1 ton per fathom for lead. The lode above the 200, west of 109 winze, is worth 1½ ton per fathom for copper ore.—Carvalhal: In the north deep adit level, west of the slide, on the north lode, the lode is small, but has a little quartz and spots of lead.

PESTARENA UNITED.—April 25: District Val Toppa: In the intermediate drive, north of second cross cut under No. 2 level on the turn of flat lode, we have an improvement in the quality of the ore, now worth as per small mill trial—18 dwts. 11 grs. of sponge gold per ton. An assay of the same stuff by fire gave 18 dwts. 11 grs. of fine gold and 5 dwts. 17¼ grs. of silver per ton. In the end on branch in west side above No. 1 level we have also an improvement in the quality of the ore, now worth as per mill trial—13 dwts. 20 grs. of sponge gold per ton. The assay shows it to contain 14 dwts. 16¾ grs. of fine gold and 6 dwts. 20 grs. of silver per ton. All other places not mentioned are about the same.—Pestarena District: In the 55 end north, driving under the old Acquavite Mine, we have a considerable improvement in the size of the lode. A trial of the ore from this end will be made shortly. The shoot of ore which this end has just reached proved in the upper levels to be a rich one, worth about 2 ozs. of gold per ton. No change in any of the other points not mentioned.

BELSTONE MINE.—The affairs of this company are, we understand, now in course of voluntary liquidation, with the view of transferring the property to a new company, to be called the Mid-Devon Copper Mining Company (Limited), the whole of the capital for which has been privately subscribed. The Mid-Devon Company will acquire this extensive and valuable mining sett on very advantageous terms, and arrangements have also been made with the free-holders for a reduction of the royalties. The sole cause, we understand, for the failure of the Belstone Company was a serious accident to the pumping machinery, which happened at the moment when success seemed about to reward the perseverance of the shareholders by returns of rich ore from the lode recently cut at the 80 fm. level. Unfortunately, however, as is too often the case, the calculations of the proprietors as to working capital had been so evenly balanced that there were not sufficient funds in hand with which to repair this unexpected misfortune. More capital had, therefore, to be procured; hence the necessity for re-constructing the company. We hope, for the sake of mining enterprise in this district, that as soon as the necessary repairs and additions to the surface machinery are completed, the very favourable predictions of the many eminent mining authorities who have inspected this property may be verified.

TERRESTRIAL TIME.—The unhappy accident of a blundering Irish printer, by which 5 35 P.M., instead of 5·35 A.M., appeared in a railway time table, compelled Mr. Sandford Fleming, C.M.G., M.I.C.E., F.G.S., F.R.G.S., the engineer-in-chief of the Canadian Pacific Railway, to sleep a night at Bandoran, which it may be necessary to state is an Irish village, about 42 miles from Killennumery, and in the result the victim of this annoying inconvenience has written a 32 page pamphlet, intended to provide a remedy for the eccentricities of our earth in making her diurnal rotations so clumsily as not to produce mid-day in all places at the same moment. He proposes to divide the surface of the earth into 24 lunes, forming distinct local time sections extending from pole to pole within one or other of which every place would find its position. Instead of enquiring the time at which, for example, a train woul start, we should simply have to ask—"What's the lune," and the reply "N+H" would at once inform us how much time we had to spare, supposing that we were aware that we were "J—G" minutes' ride from the station. The simplicity is obvious, and the great advantage is that the inhabitants of London, Orsk, Toronto, Timbuctoo, Yenisaisk, and elsewhere would all use the same notation. As the clock-face will have the whole 24 hours marked on the dial, the erroneous printing of "p" for "a" will cause no trouble.

LEAD ORES.

Date.	Mines.	Tons.	Price per ton.	Purchasers.
April 29	Pandora	35	£10 8 6	Jenkin Brothers.
	Saint Harmon	20	10 15 6	E. Williams and Co.
30	Rookhope	40	10 0 6	J. Dinning.
May 2	Van	100	11 15 6	Adam Eyton.
	ditto	200	11 1 6	Panther Lead Co.
	ditto	50	11 3 6	Weston, Son, and Co.
	ditto	50	11 5 6	St. Helen's Co.

BLENDE.

Date.	Mines.	Tons.	Price per ton.	Purchasers.
May 2	Van	150	£ 9 1 0	Vivian and Sons.

Original Correspondence.

FLAGSTAFF MINING COMPANY.

SIR,—Referring to the anonymous letter on the Flagstaff Company in last week's Journal, I would like to remind any of your readers who may need to be so reminded that it is a very easy thing to criticise the movements of directors of public companies. If the writer had been either on the board or the committee of the Flagstaff, he would have been compelled to speak in a very different tone from that which characterises his letter. When such cynics have the advantage of "writing in the dark," they obtain a latitude which they could never reach were they compelled to give their names to the public. I trust your intelligent readers consider this when meeting with "anonymous" communications evincing such a spirit.—*Strand, April 30.* M. C. VINCENT.

FLAGSTAFF MINING COMPANY.

SIR,—As an old shareholder I am pleased to observe the energetic efforts of the present Flagstaff board. The step just decided on, according to the last circular, seems both judicious and ingenious. The only question is, why was it not thought of long ago? It seems if carried out to meet the principal difficulty now in the company's way. It proposes raising a comparatively small sum for accomplishing an object vital to the company's continuance—a sum which, independently of the attractive security, there should be no difficulty in obtaining if the shareholders (to whom it is exclusively offered) consider their own interests. I trust that others will come to my conclusion and send up their contributions without delay.

VERITAS

FLAGSTAFF MINING COMPANY.

SIR,—In last week's Journal was a letter from a "Shareholder," in which were exhibited both accuracy of information and vigilant observation, and I was glad to see that others besides myself were watching the proceedings of the board and the committee, and I think the writer did the company service by drawing attention to the grave omission of the board in the matter of the annual general meeting, now overdue. Your correspondent was not over-hasty in this respect; for the circular just issued does not so much as hint an intention on the part of the directors to convene the shareholder, as by law required, and by the peculiar circumstances of the company more than usually desirable. The directors, however, while withholding from the shareholders the necessary opportunity of judging for themselves as to their position, and as to the policy to be pursued, show themselves fertile in undigested schemes, and, whilst admitting the failure of their application of the 29th ult. as not having "resulted in sufficient funds," courageously propose a subscription of 3700*l.*, "or 6000*l.*," or "such other sum," &c.—in fact, any sum you like—wherewith to buy up the judgment debts, forgetting altogether the previous announcements of the board, as in the circular of December last, that the company's property had passed under one of those judgments, and was, in fact, recorded in the name of a creditor, and they ignore altogether the fact—very important to all lenders—that until the judgment in Tarbot's case has been reversed there is absolutely no property to "secure." The board may, as the committee say, have been "strengthened by the addition" of a Lion-ite and the Strand mapseller, and may have "full powers of appreciation," but they show themselves unable to estimate the situation or prescribe a remedy.

Only a month ago they prescribed 25,000*l.* to be advanced on debentures, and with that sum they were confident of making a clean sweep of all difficulties, and in one and the same circular they stated an indebtedness of nearly 40,000*l.* Both board and committee exhibit much partiality to these debentures as securities, and yet the committee who say (but incorrectly) that they were appointed to investigate should by this time have learnt that bonds issued after a heap of judgment must have but a poor chance of being paid. To give an adequate idea of the fluctuating value set on these securities I may mention that a few weeks ago they were selling the debentures for the value of the spoilt stamps. Let not the original holders of debentures be alarmed; their position is quite different, and indeed I may say that with regard to them I have had submitted to me a scheme by a late member of the board (Mr. Pearson, I believe), which I have discussed with several members of my profession on behalf of their clients, and have agreed with them that it deserves careful consideration. But I am trespassing on your indulgence. I took up the pen to endorse your correspondent's demands for the general meeting, and the explanations of the committee. They have issued a report, in which they state nothing to the purpose save that no funds have been subscribed for them to take care of. That was the stated object of their appointment, and not the concoction of schemes, in which they and the board seem to be much occupied, and in furtherence of which they distinctly state they will "hold themselves free to act." A LAWYER.

[For remainder of Original Correspondence see this day's Supplement.]

COPPER ORES.

Sampled April 17, and sold at Swansea, April 30.

Mines.	Tons.	Produce.	Price.	Mines.	Tons.	Produce.	Price.
Betts Cove	105	5⅜	£2 12 0	Virneberg	17	15¼	£8 10 6
ditto	105	5⅜	2 15 0	Laura Ore	2	11¾	5 0 6
ditto	105	5¼	2 13 6	ditto	1	18	9 10 6
ditto	105	5¼	2 15 0	Alcontim	28	21½	12 4 6
ditto	117	6½	3 4 0	ditto	27	11⅜	6 2 6
ditto	117	6½	3 3 6	ditto	27	7½	4 0 0
ditto	116	6½	3 2 6	ditto	11	19¾	11 0 6
ditto	104	6½	2 18 0	ditto	21	8¾	10 0 0
ditto	104	6	2 16 6	Copper Reg.	19	34¾	19 14 0
ditto	92	6	2 16 6	ditto	5	20	17 0 0
Cavera	80	6½	3 4 6	Almodovar	16	12⅝	7 3 6
ditto	80	6½	3 4 0	ditto	7	16¾	9 0 6
ditto	80	6½	3 3 6	Australian	7	22½	12 13 0
Aljustrel	88	4½	2 2 6	ditto	5	13⅝	12 13 0
ditto	87	4¾	2 3 6	Aljustrel	62	4¾	2 2 6
Virneberg	53	23	12 16 6	ditto	61	4½	2 2 0
ditto	61	13	8 3 6				

TOTAL PRODUCE.

Betts Cove	1070	£3095	1 0	Alcontim Ore	114	£946	19 0
Cavera Ore	240	768	0 0	Copper Regulus	24	459	6 0
Aljustrel Ore	175	376	4 6	Almodovar Ore	23	177	19 6
Virneberg	131	1323	6 6	Australian Ore	12	151	16 0
Laura Ore	3	19	11 6	Aljustrel Ore	123	261	7 6

COMPANIES BY WHOM THE ORES WERE PURCHASED.

Names.	Tons.	Amount.
Copper Miners' Company	369	£ 1,189 2 6
Nevill, Druce, and Co.	115	355 15 0
Vivian and Sons	249	771 3 0
Williams, Foster, and Co.	548½	2,389 14 3
Mason and Elkington	326	961 16 6
Charles Lambert and Co.	132½	1,535 15 9
Sweetland and Co.	175	376 4 6
Total	1915	£ 7,579 11 6

NO SALE on May 14.

TOTALS AND AVERAGES.

	21 cwts.	Produce.	Price.	Per unit.	Standard.
Whole sale	1915	7 7-16	£3 19 1	10s. 8d.	£79 18 7

COPPER ORES.

Sampled April 17, and sold at Tabb's Hotel, Redruth, May 2.

Mines.	Tons.	Price.	Mines.	Tons.	Price.
Mellanear	82	£2 16 0	East Pool	37	£1 17 0
ditto	79	3 4 0	West Seton	70	3 13 6
ditto	75	2 16 0	ditto	59	3 16 0
ditto	72	2 11 6	ditto	38	3 18 0
ditto	64	3 6 0	ditto	37	4 2 6
ditto	66	2 3 6	South Crofty	65	2 1 0
ditto	62	2 9 6	ditto	62	1 18 6
ditto	36	8 5 6	Killifreth	33	3 8 0
West Tolgus	74	7 9 0	ditto	31	2 0 6
ditto	67	4 10 6	ditto	13	1 4 6
ditto	63	6 11 6	Botallack	59	7 0 6
ditto	57	6 7 0	Carn Brea	22	1 9 0
ditto	39	3 17 6	ditto	20	2 13 6
East Pool	58	3 3 6	North Busy	34	5 18 6
ditto	54	2 18 0	Wheal Comford	20	3 8 0
ditto	46	2 16 0	West Roskear	17	2 0 0
ditto	39	1 18 0	Wheal Unity Wood	3	2 0 0

TOTAL PRODUCE.

Mellanear	540	£1697	2 0	Botallack	59	£414 9 6
West Tolgus	300	1781	15 6	Carn Brea	42	85 8 0
East Pool	232	605	15 0	North Busy	32	189 13 0
West Seton	204	782	5 6	Wheal Comford	20	68 0 0
South Crofty	127	252	12 0	West Roskear	17	34 0 0
Killifreth	77	190	18 0	Wheal Unity Wood	3	6 0 0

Average standard ..... £ 83 2 0 | Average produce 7¾
Average price per ton £3 14 0
Quantity of ore ..... 1653 | Quantity of fine copper 128 tons 4 cwts.
Amount of money £6107 17 6
LAST SALE.—Average standard ..... £ 87 9 0 | Average produce 7
Standard of corresponding sale last month, £ 84 0 0—Produce, 8¼

COMPANIES BY WHOM THE ORES WERE PURCHASED.

Names.	Tons.	Amount.
Vivian and Sons	497½	£2133 16 9
Grenfell and Sons	202½	788 16 9
Nevill, Druce, and Co.	312	832 14 0
Williams, Foster, and Co.	470	1872 19 6
Mason and Elkington	171	849 10 6
Total	1653	£6107 17 9

WATSON BROTHERS' MINING CIRCULAR.

Ten years ago the weekly information which had previously been published for a great number of years in WATSON BROTHERS' Mining Circular was transferred to the columns of the *Mining Journal*, with the following announcement; which is now reproduced in consequence of the numerous letters and enquiries handed to them of late in reply to one which appeared in the Journal on the Clementina Mine.

WATSON BROTHERS,
MINEOWNERS, STOCK AND SHARE DEALERS, &c.,
1, ST. MICHAEL'S ALLEY, CORNHILL, LONDON.

The great extension of mining business, the difficulty so often complained of by country shareholders in getting accurate and disinterested information as to the state of Cornish and Foreign Mines, and of the financial and real position of mining companies generally, have induced Messrs. WATSON BROTHERS to make their Circular now published in the *Mining Journal* more extensively known, and to state—

That they issue daily to clients and others who apply for it a Price List (as supplied to most of the London and country papers), giving the closing prices of Mining Shares up to Four o'clock.

They also buy and sell shares for immediate cash or for the usual fornightly settlement in all Mines dealt in on the Mining and Stock Exchanges, at the close market prices of the day, free of all charges for commission. They deal also, on the same terms, in the Public Funds, Railways, Telegraphs, and all other Securities dealt in upon the Stock Exchange.

Having agents in all the mining districts, they are constantly getting mines inspected for their own guidance, and will also obtain special reports of any particular mine for their clients, for the inspecting agent's fee of £2 2s.

In the year 1843, when mining was almost unknown to the general public attention was first called to its advantages, when properly conducted, in the "Compendium of British Mining," commenced in 1837, and published in 1843, by Mr. WATSON, F.G.S., author of "Gleanings among Mines and Miners," "Records of Ancient Mining." "Cornish Notes" (first series, 1862), "Cornish Notes" (second series, 1863), "The Progress of Mining," with Statistics of the Mining Interest, annually for 21 years, &c., &c. In the Compendium, published in 1843, Mr. WATSON was the first to recommend the system of a "division of small risks in several mines, ensuring the success in the aggregate," and Messrs. WATSON BROTHERS have always a selected list on hand. Perhaps at no former period in the annals of mining has there been more peculiar need of honest and experienced advice in regard to mines and sharedealing than there is at present; and from the lengthened experience of Messrs. WATSON BROTHERS they are emboldened to offer, thus publicly, their best services and advice to all connected with mines and mining.

Messrs. WATSON BROTHERS are daily asked their opinion of particular mines, as well as to *recommend* mines to invest or speculate in, and they give their advice and recommend mines to the best of their judgment and ability, founded on the best practical advice they can obtain from the mining districts, but they will not be held responsible, nor subject to blame, if results do not always equal the expectations they may have held out in a property so fluctuating as mining.

D'ERESBY MOUNTAIN.—Some misconception has arisen on the points referred to—No. 5 adit is driven *on* the Gorse lode, and the stones of ore *we* referred to last week were *from* the Gorse lode, 200 fms. further north, as we also stated, than the rich stope, and not from an east and west lode. The Gorse lode, which is of great width, has generally produced steel-grained ore in about the shale

SATURDAY, APRIL 27.—Market quiet, and prices merely nominal. D'Eresby Mountain, 80 to 100; Van, 19 to 21; West Chiverton, 11 to 13; D'Eresby Consols, 13 to 14; Lea thills, 3¾ to 4; Roman Gravels, 8 to 8½; East Van, 5¼ to 5½; Tankerville, 4 to 4¼; Carn Brea, 41 to 43; Dolcoath, 29 to 31; Tincroft, 10½ to 11½; South Condurrow, 11 to 11½; Agar, 3¾ to 4½; Grenville, 3¼ to 3¾; Peevor, 6¼ to 6¾; Richmond, 9 to 9½; Eberhardt, 5¾ to 6¼.

MONDAY, APRIL 29.—There is very little alteration in prices to-day, the dealers being chiefly engaged with the settlement.

TUESDAY, APRIL 30.—Market very quiet, and the following are nominal quotations. Carn Brea, 40 to 42½; Dolcoath, 29 to 31; D'Eresby Mountain, 80 to 100; D'Eresby Consols, 11 to 13; East Van, 6 to 6½; Grogwinion, 2¾ to 3¼; Great Laxey, 18 to 19; Leadhills, 3⅞ to 4¼; Mellanear, 4 to 4¼; Parys Mountain, 8s. to 10s.; Penstruthal, 4s. to 5s.; Roman Gravels, 8 to 8½; Rookhope Lead, 17s. to 19s.; Glenroy, 15s. to 17s. 6d.; South Condurrow, 11 to 11½; Tankerville, 4 to 4¼; Tincroft, 10½ to 11¼; Van, 19 to 20; West Chiverton, 11 to 13; West Pateley Bridge, 1¼ to 2¼; Agar, 3¾ to 4¼; Wheal Grenville, 3¼ to 3¾; Wheal Peevor, 6 to 6½; Wye Valley, 1¾ to 1¾; West Wye Valley, 2¼ to 3¼; Chontales, 8s. to 10s.; Eberhardt, 5¾ to 6¼; Flagstaff, 10s. to 12s. 6d.; Frontino, 1¾ to 2¼; New Quebrada, 1⅜ to 1⅝; Panulcillo Copper, 1s. 6d. to 17s. 6d.; Richmond, 9 to 9½; Santa Barbara, 2s. to 3 s.

WEDNESDAY, MAY 1.—Market closed.

THURSDAY, MAY 2.—Market inactive, and prices nominal. Carn Brea, 40 to 42½; Dolcoath, 28 to 31; D'Eresby Mountain, 80 to 100; D'Eresby Consols, 11 to 13; East Van, 6 to 6⅛; Grogwinion, 2¾ to 3¼; Great Laxey, 18 to 19; Leadhills, 3⅞ to 4¼; Mellanear, 4 to 4¼; Parys Mountain, 8s. to 10s.; Penstruthal, 4s. to 5s.; Roman Gravels, 8 to 8½; Rookhope Lead, 17s. to 19s.; Glenroy, 15s. to 17s. 6d.; South Condurrow, 11 to 11½; Tankerville, 4 to 4¼; Tincroft, 10½ to 11¼; Van, 19 to 20; West Chiverton, 11 to 13; West Pateley Bridge, 1¼ to 2¼; Agar, 3¾ to 4¼; Wheal Grenville, 3¼ to 3¾; Wheal Peevor, 6 to 6½; Wye Valley, 1¾ to 1¾; West Wye Valley, 2¼ to 3¼; Chontales, 8s. to 10s.; Eberhardt, 5¾ to 6¼; Flagstaff, 10s. to 12s. 6d.; Frontino and Bolivia, 1¾ to 2¼; New Quebrada, 1⅜ to 1⅝; Panulcillo Copper, 1s. 6d. to 17s. 6d.; Richmond, 9 to 9½; Santa Barbara, 2s. to 3 s.

FRIDAY, MAY 3.—Market generally very quiet. D'Eresby Mountain, 80 to 100; D'Eresby Consols firmer at 11½ to 13½; East Van, 5½ to 6; Great Laxey, 18 to 19; Roman Gravels weaker at 7½ to 8; Leadhills, 3⅞ to 4¼; Van, 19 to 20; Tankerville, 4 to 4¼; Carn Brea, 40 to 42½; South Condurrow, 11 to 11½; Tincroft, 10 to 11; Agar, 3¾ to 4¼; Grenville, 3¼ to 3¾; Mellanear, 3¾ to 4¼; Parys Mountain, 8s. to 10s.; Richmond, 9½ to 10; Eberhardt, 5¾ to 6¼.

THE WEEK.

SATURDAY, APRIL 27.—Several foreign bonds and railway stocks have now reached a level, from which a rise may safely be expected, unless we are compelled to take up arms against Russia. Caledonian have receded to 113¼; Great Eastern to 47¼; Chatham ordinary to 21, 21½; and North British to 79¼. Van shares were dealt in at 20, and Roman Gravels at 8¼. Wye Valley, West Wye Valley, and Grogwinion Mines shares were offered rather considerably. The last named declined to 3, the two others being 1¾ and 3 respectively. East Van was a dull market at 5¾ to 5¼. There was a little buying of Port Phillip and Kapanga at 10s., while South Aurora and Jervall were offered.

MONDAY.—Egyptian bonds remained firm throughout the day. It is now confidently hoped in many quarters that the coupon of the Unified debt will be paid in full on Wednesday. The bonds closed 32½ to 32¾, the preference being 27⅝ to 53¼. Mexican, 7½ to 7⅜; ditto 1864, 3¼ to 4. Greek, 13½ to 14. Honduras 3½ to 4¼. Bolivian, 22½ to 23. Turkish Five, 8 to 8¼. Spanish, 12⅜ to 12¾. Turkish 1871, 32 to 33. Several of these would have an important rise the moment there appeared the chance of a durable peace. Van shares were offered at 19½, while East Van rallied to 5¼. Erie Railway shares, $1⅛ to $13. Illinois, 76¼ to 77. Atlantic First Mortgage, 21 to 23.

TUESDAY.—A large business was done in Erie securities; the ordinary shares closed without change, but the bonds and preference shares made an important advance. The First Mortgage bonds closed $1¼ higher, and the Second $2 higher, the Preference advancing $1¼. Shares of the Mercantile Bank of the River Plate advanced to 2¼, buyers, and a further rise seems probable. A short time back the present condition of the Bank was sketched in this article. In mining shares Hultafall, East Van, and Leadhills were all in demand at higher prices. Great Laxey fell to 18, and Eberhardt to 5¾.

WEDNESDAY.—Holiday on the Stock Exchange.

THURSDAY.—Shareholders in the Richmond Mining Company will receive a dividend of 7s. 6d. per share on and after Tuesday next. Since the restarting of the furnaces the directors have now paid 40,500*l.* in dividends, and 12,800*l.* on account of debentures. Shares in the Liebeg Extract of Meat Company have now touched 29½; a few months back they were below 22. There will be in June the usual dividend of 10s. per share. The Rio Tinto directors have issued their report, which is anything but encouraging. The revenue account shows a deficit of 62,721*l.* It is attributable to the severe depression in chemical products and in copper. The Bombay Gas Company dividend will be 7½ for the year.

FRIDAY (*Opening*).—The markets are considerably firmer than last night. Russian, 1873, is ½ higher, and Egyptian Unified ⅜. Caledonian has advanced ½ per cent. In mining shares there is some demand for Glyn at ⅜, and for Leadhills at 4, and Hultafall at 4¼. The Newport Abercarn Colliery will hold its sixth general meeting on the 9th inst. The colliery is now understood to be nearly completed, and capable of an output of 160,000 tons per annum, but there is an urgent necessity of further debentures being taken up by the shareholders. The 10*l.* shares can now be had at 3½.——*Two o'clock.*—This is settling day in Consols, and the price has now reached 98. Egyptian Unified, which are now quoted ex the coupon, are steady at 30 to 30⅛. Russian, 1873, have given way somewhat from the opening, being now only 74¼ to 74½. East Van, 5¾ to 5⅝; Van, 19½ to 20⅛; Roman Gravels, 7¾ to 8; Llanrwst, 2 to 2¼; Chapel House Colliery, 3¼ to 3⅛; Great Western, 1¼ to 2.——*Four o'clock.*—North British are no better than 79, and Egyptian Unified are rather weaker. Others show but little change. Alltami Colliery, 3 to 4; Thorpe Gawber, 2¾ to 2¾; Eberhardt, 5¾ to 6; Port Phillip, 10s. to 11s.; Don Pedro, 10s. to 12s. 6d.; Javali, 4s. to 6s.; Wye Valley, 1¼ to 1⅛; Grogwinion, 3 to 3⅛.

FERDINAND R. KIRK.

RIO TINTO COMPANY.—The report of the directors for the year 1877 states that the revenue account now submitted for the first time shows a debit balance of 62,721*l.*, which they attribute to the bad state of trade and the low price of copper. A sum of 32,408*l.* profit arising from the buying in of 5 per cent. bonds in the open market, instead of paying them off at par, and a further sum of 7765*l.*, representing difference of interest on account of these bonds, is placed to a reserve account. The 5 per cent. bonds now outstanding amount to 2,016,940*l.*, and the 7 per cents. to 915,780*l.* Considerable progress has been made in developing the property, and owing to the better selection of the ores shipped the percentage of copper has been latterly maintained at 2¾. Last year 211,487 tons of pyrites were sold, and this year the quantity already contracted for is 242,000 tons. Owing to arrangements with the Tharsis Company and others, enhanced prices have been obtained, while a limit has been put to competition. According to the balance-sheet the share capital of the company is 2,250,000*l.*, and the mortgage capital, 2,962,280*l.* In addition the company is due 763,423*l.* on loans on current account; 131,151*l.* on loans for the redemption of mortgage debt; 204,108*l.* on bills payable; 89,100*l.* balance due to the vendors of the mines; and 139,433*l.* to sundry creditors; or altogether 1,297,216*l.* The assets consist in the mines, the railway pier, and rolling stock, buildings, machinery, houses, land, ore, stores, &c., and although the company has for the past year alone a debit balance of only 62,721*l.*, it has clearly a large leeway to make up, which will require good trade and great economy. It will, however, be probably much assisted by the opening of the connection of the Madrid, Saragossa, and Alicante Railway with its line to Huelva, whereby the pier at that port will become valuable for the trade of Seville.

Mining Correspondence.

BRITISH MINES.

ABERDAUNANT.—S. Toy, May 1: We have now driven 4 fathoms east on the course of the lode at the 15; the lode may be from 3 to 4 fms. wide, but we are only carrying about 3 ft. of it and 2 ft. of the killas. The lode is chiefly composed of carbonate of lime, carbonate of iron, sulphur, a little blende, and good strong cubes of lead. It is what I call a strong kindly-looking lode, and I should not be surprised to see an improvement at any time.

ASSHETON.—George Rickard, May 1: The 50, east of boundary shaft, has been set to four men to drive, with the object of stoping the back as well, at 5*l.* per ton. No. 1 pitch, in back, is set to four men, at 4*l.* per ton for lead ore. No. 1 pitch, below the 40, west of Mawr's, is set to two men, at 5*l.* per ton for lead ore. No. 2 pitch, below the 40, west of Mawr's, to four men, at 4*l.* per ton. No. 1 pitch, in back of the 50, east of Mawr's, to two men, at 6*l.* per ton. No. 2 pitch to two men, at 7*l.* per ton. No. 1 pitch, in back of the 20, east of Mawr's, on the north and south lode, to four men, at 4*l.* 5s. 6d. per ton. All the pitches have 10s. per ton for blende. The ores sold to the Panther Lead Company were shipped on Monday. We shall, all well, sample again in the course of a few days.

BETWS-Y-COED.—H. T. Haley, April 29: Setting Report: To drive the shallow adit east, by four men, the month, at 3*l.* 10s. per fathom; the lode is looking well, and will produce 30 cwts. of lead per fathom. To drive the deep adit east, by two men, the month, at 5*l.* per fathom; this end is yielding about 5 cwts. of lead per fathom, and likely to improve. A stope in back of the shallow adit, by one man, the month, at 2*l.* per fathom, worth 10 cwts. of lead per fathom. A pitch in bottom of the shallow adit, for two months, at 6*l.* per ton for lead. As the water is in the 20 fm. level I have not offered any of the bargains there. The men from the ends I have put to clean up the lake, and the shaftmen to sink the eastern shaft in advance of the shallow adit end; the lode here looks well, and when communicated with the deep adit will give us a first-rate piece of ground for stoping. I will get as much stuff as possible for the crusher by the time we have a supply of water to work it. At present it is likely to rain heavily.

BLAEN CAELAN.—Jonathan Pell, May 2: I omitted in last week's report to say that the value of the lode in the winze kept up its value, being worth fully 50*l.* per fathom. Preparatory to driving west on the lode in the 34 I have set the men to cut through to the north wall of the lode, and which will be done, I hope, next week; and, as some valuable strings of lead have been left on the north side in sinking, it is quite probable we shall find a considerable portion of the lode standing. The engine-shaft is down 2 fms. below the 20, and the ground appears favourable for progress. It will be some fathoms before the lode standing on the north side—which contains some very excellent seams of lead in the plat in the 20—is cut into. The arrangements made for utilising the old 20-ft. diameter water-wheel for driving the self acting dressing-machines and buddles is being proceeded with, and will be complete by the end of the month. The 40-ft. wheel will then have ample power for crushing and pumping to a greater depth.

BODIDRIS.—H. Hotchkiss, May 1: We are making fair progress in driving the 60 yard level south cross-cut, which is now more settled; the ground is jointy, and is made up of light coloured limestone, spar, and thin layers of shale. Seeing we are getting into settled ground, and that of a good bearing kind, I am in great hopes of very soon meeting with a rich lode here. In he 45 east, on the middle lode, the lode continues its course in a well defined state, and is 1 ft. wide, well charged throughout with blende. The stopes in the back of this level are producing good stuff for dressing floors. I have commenced a stope in the bottom of the 30 near the shaft, where in driving the level we had a little ore. We have extracted therefrom some beautiful solid ore out of the matrix of the lode, and it still looks very promising. We have cleared and secured the old shaft east of present workings to the depth of 4 fms.; as yet no signs of the bottom.

CAMBRIAN MINES.—Thomas Glanville, April 30: ESGAIR-FRAITH: The lode in the eastern shaft, sinking below the 23, is producing 2 tons of copper and about 10 cwts. of lead ore per fathom. In the 23, east of shaft, the lode is yielding 2 tons of copper ore per fathom. In the rise above the 10, east of shaft, the lode is yielding 1 ton of copper ore per fathom.

— ESGAIR-HIR: In the adit level, west of new shaft, we are driving through a massive lode, and occasionally meet with good stones of lead. All our other points of operation are without change.

CARGOLL.—John Jennings, May 1: The 44 fm. level cross-cut is extended south of Bowyer's shaft 3 fathoms, in which we have passed through a small branch of a kindly nature. The killas here is now making a very favourable change, being much softer, and strong water is issuing from the end, and think we are nearing another branch. The counter lode I expect to intersect in about 3 fathoms more driving. The 34 east on the counter is being driven on a kindly branch, and is still producing fine stones of silver-lead in the bottom of the level, which will pay for dressing, and looks very promising for an early improvement. In the 34 west the lode is changed in its appearance, being better defined, and more regular in its underlay; it is 2 ft. wide, producing some good stones of blende, intermixed with silver-lead, and looking promising for further improvement. The stope in the back of this level, west of shaft, is worth 5*l.* per fathom. Nothing more met with as yet in the 34 cross cut north, east of shaft.—Main Lode: The adit level west is being driven on a very kindly lode; it is very much improved in size and appearance, and streams of water are again bursting out from the north side and breast of the end. All the machinery is working well.

CENTRAL VAN.—J. Roach, May 2: All our shaft-work is completed—that is, both lifts are in their places, frames, &c., fixed for changing pump rods in the shaft, also cased and divided to bottom securely. We have altered the dressing machine as well, and placed everything in satisfactory working order, and commenced sinking to-day. I hope to have the pleasure of announcing something good discovered shortly.

CLEMENTINA.—W. Bennetts, J. Roberts, May 1: The lode in the back of the deep adit on the east and west lode is worth 1 ton of lead per fathom. The weather still continues very dry, which prevents our forking out the water from the bottom.

COMBMARTIN.—T. Harris, T. Comer, May 2: The lode in the 28, west of Knight's cross-course, is from 4 to 5 ft. wide, containing branches of friable spar, with nice seams of lead and blende running along with them. The lode has a very kindly appearance. In the 15 east the lode is about 4 ft. wide, also carrying nice seams of lead, which we are saving out. Fair progress is being made in driving the adit cross cut north, and the killas is showing evidence of our near approach to another lode. Upon the whole, we think the mine has more encouraging prospects than it had a fortnight ago.

COURT GRANGE.—J. G. Green, May 1: Below I beg to hand you our setting report for May: The engine-shaft is down 10 fms. 1 ft. below the 60. The men have to sink 4 ft. more to complete their bargain, when I shall re-set for another 5 fms. No work is being done in the 65, owing to the water. The 45 to drive east, by four men, at 130s. per fathom; lode improving for lead. The 30 east, to four men, at 180s. per fathom; very strong lode, worth for lead and blende 8*l.* per fathom. The 14 east, to six men, at 160s. per fathom; lode improving again, producing saving stuff for the floors. I shall commence sinking a winze between the two last-named levels next week. We are now engaged completing the ventilating appliances. We have 10 men putting in timber and preparing stopes for regular work. Excellent progress is being made in the erection of the machinery. We are cross-cutting to the lode at Francis's shaft, by six men, and on intersecting the same shall commence to drive west on its course, to met the 14.

DE BROKE.—J. Phillips, May 1: The lode in Wilson's shaft is 4 ft. in width, and unproductive; present depth below the 45 fm. level 4½ fms. We are preparing a sinking lift to cope with the increased water. The lode in the 45, east of Wilson's, is indicating a speedy change for the better; composed of killas, qaartz, and sulphur, with stones of lead and copper ores. The trial drift east of 25 stope is suspended, and the men removed to the 35, where they are driving on the northern part of a large lode of fine appearance, producing good patches of lead ore. No change to report as to the stopes. Dressing and other work is proceeding as usual, and I intend to sample 20 tons of lead ore to-morrow.

D'ERESBY CONSOLS.—J. Roberts, W. Bennetts, May 1: We can drive no further on the Gorse heading until we have the tramway laid, which we shall commence to do forthwith. There is no change yet in Owens's lode. It is letting out water freely. We have commenced clearing the shallow adit level in order to clear up Owens's shaft, which is said to contain a good course of lead. We think that the water in the deep adit must be coming from this and draining it.

D'ERESBY MOUNTAIN.—John Roberts, Wm. Bennetts, May 1: We are making good progress in clearing up No. 2 shaft on No. 5 adit, and we expect to get to the bottom next week. This shaft appears to have been sunk on the shale, and the lode left to stand entirely. We believe that when we have cleared this we shall have a communication to No. 3 shaft. No. 4 adit, on Gorse lode, still retains its value as reported last week. No. 3 has not since been let for want of men. We cannot help thinking that the No. 1 adit should be driven to get under the old men's workings on the top of the mountain. We are getting on well with the buildings at surface.

DENBIGHSHIRE CONSOLIDATED.—R. Prince, A. Francis, May 2: We have four men driving east from the bottom of No. 1 sump, and have now placed two men to rise up in the roof to prove the head of ground that we have been passing through for some little time; the result of this rise has been very gratifying, there being an increase in the yield of lead, and good prospects of a further improvement. The indications in our 112 west are very promising; there has been a great and favourable change taken place in the character of the lode for the last few yards, and I think we are near an important discovery. The lode in the forebreast of the 66 west has an extraordinary appearance; we have no walls to it, and its composition is almost identical with the ground met with on a former occasion in Parry's workings; a few yards back from the forebreast there is splendid head ore in the bottom of the level; we have tried this for a very short time, and have taken some hundredweights of lead out. We then ordered the men to start a sump further east, which they have now sunk several yards; they have taken out rocks of lead weighing more than 1 cwt. each, also have opened out a considerable extent of ore ground. In the rise in the 112 east we have to report a decided improvement, and are now getting a fair amount of stuff for the washing floors.—Surface Operations: Our dressing shed is quite a cheering sight.

DERWENT.—John Morpeth, April 30: I beg to report to you again on the value of the various workings underground at this mine:—Jeffries' Shaft, Middle Vein: The 95 east continues by the side of the vein, and the 93 west producing 10 cwts. of ore per fathom. Over the former level the stopes, &c., are yielding 18, 20, 24, and 20 cwts. of ore per fathom respectively; average width of the vein 6½ ft., and over the latter level the respective yield is 10, 24, 10, 12, and 22 cwts. of ore per fathom; vein 4 ft. wide on the average.—Sun Vein: The 70 west is without change, 1 ft. wide, and promising. The stope in the back is 3 ft. wide, and yields 9 cwts. of ore. The same level eastward is 2 ft wide, and worth 12 cwts. of ore per fathom, and the stope in the back working chiefly yields 22 cwts. of ore per fathom; vein 3 feet wide. The Sun vein in the stope under the 40, 44 fms. east from the shaft, yields 4 cwts. of ore per fathom; vein 1 ft. wide.—Westgarth Shaft, Middle Vein: The 93 east, which is by side of a good orey lode, is very hard, the ground being a mixture of limestone, capel, quartz, and white iron. Over the 74, west of shaft, in one of the stopes there is a little improvement, now worth 12 cwts. of ore per fathom; the other one yields 11 cwts.; width of vein in both places is 2 ft. Machinery all working very well.

DEVON GREAT CONSOLS.—Isaac Richards, May 3: Wheal Josiah—Richards' Shaft: In the 300 east the lode is 3½ ft. wide, consisting of capel, quartz, and a small portion of mundic. In the 280 west the lode is 2½ ft. wide, and of the same general character as that in the 300 east. Other parts of the mines are without alteration. We sampled on Friday last (computed) 775 tons of copper ore, for sale on May 23.

DUBBY SYKE.—W. Tallentire, April 26: Dubby Syke Level: We have commenced to sink from the surface to meet the rise; we are down with the shaft 5 ft. in clay and stones. The men have been busy securing the rise with timber the main part of the week, which has prevented the shaft from being further advanced.—Dressing-Floor: The bouse team, grate, and crushing place are finished, and we shall soon have the floors ready for operations.

EAST VAN.—Wm. Williams, May 2: Tempest shaft is sunk 4 fms. 5 ft. below the 55; set to eight men, at 240s. per fathom. The 55 east is set to four men to drive upon the course of the lode, at 80s. per fathom. The same level west is set to four men, at 70s. per fathom. Both these ends look very promising, and producing good stones of ore; hardly rich enough to value, but we are saving portions of the stuff for dressing.

EAST WHEAL LOVELL.—R. Quentrall, May 1: There is no alteration at Fatwork since my last report. In the south part of the sett we have been very busy during the past fortnight getting the engine in working order, fixing shaft-bob, putting down lift, &c. This is nearly complete, and we shall be ready to work this week, when we shall be sinking on both lodes with full pares of men. We have had some very good stones of tin in sinking during the last week.

GAWTON COPPER.—G. Rowe, G. Rowe, jun., April 27: The lode in the 82, west of cross-cut, is carried 6 ft. wide, producing very strong sulphur and arsenical mundic, spotted with copper ore. The part of the lode carried in the 95, east of cross-cut, is 8 ft. wide, producing very strong arsenical mundic, spotted with ore, worth 8*l.* per fathom. The lode in the winze and stope below the 105 east is worth 30*l.* per fathom. The rise and stope in the back of the 105 is worth 20*l.* per fathom. The drivage of the 117 east is still continued on the north part of the lode in easy ground for progress. The tribute department is without change.

GLASGOW CARADON CONSOLS.—William Taylor, W. J. Taylor, April 29: At Elliott's shaft we have cut ground for bearers and cistern at the 90, fixed standing lift in the same, and taken up all the water at this level, which will expedite the sinking below. The shaft is now down about 3 fms. below the 90. The sinking is being pushed on by nine men as fast as possible. The ground in the 90 end east is a little tighter, lode worth 15*l.* per fathom. The ground in this level west is favourable, and the lode worth 12*l.* per fathom. In the winze in bottom of the 78 the lode is worth fully 12*l.* per fathom. The 78 east is producing stones of ore—a large strong lode—and the ground by it is easier; we look for improvement here. The 78 west, on south lode, is worth 10*l.* per fathom. No change in any other drivage. The stopes and pitches throughout the mine continue to turn out very well, varying in value from 12*l.* to 35*l.* per fathom. We have most of the materials ready to lay in the double skip-road in the new shaft; this and the new tram road to the floors are being got on with as fast as possible. Our next monthly sale of ore will be (computed) 240 tons, the dressing of which is in a forward state.

GORSEDD AND MERLLYN.—May 2: Our shareholders must be aware of the serious fall that has taken place in the price of lead ore, but there is reason to believe that an improvement will take place before long, but in the meantime it has been considered judicious to alter our plans of operations; we have, therefore, stopned the two levels driving east, and have placed a full force of men to sink the new shaft 20 yards deeper. The price per yard has been set at 8*l.*, and the men are making progress in the operation. We shall thus attain a much larger section of ground, which at a lower level should be made available to considerable advantage. It is also reasonable to expect we shall meet with great and continuous deposits of lead ore. In the driving west there is very good lead, but the ground is hard. The tributers are doing well. We have sent off the 50 tons recently sold, and are now busy dressing lead and blende.

GREAT DYLIFFE.—Evan Evans, May 1: At the 95 east, on Dyliffe lode, we are stoping by four men, at 3*l.* 14s. per fathom; we shall value this next week. At the 30 we are driving and stoping by four men, at 6*l.* per fathom for driving and 3*l.* per fathom for stoping; worth about 15 cwts. per fathom. We expect this to be much better in a few weeks. Four men stoping at new lode at 3*l.* per fathom, and 20s. per ton for raising stuff; worth about 10 cwts. per fm. At the upper adit we are driving a cross-cut north by two men in search of the Llechweddu lode, at 5*l.* per fathom. At the 105, east of Llechweddu shaft, we have four men stoping at 3*l.* per fathom; worth about 12 cwts. per fathom. Above the 85 west we have four men stoping at 37s. 6d. per fathom and 30s. per ton; worth about 10 cwts. per fathom. At the 105, east of Bradford shaft, we have 14 men, at 52s. 6d. per fathom: worth about 12 cwts. per fathom. There are 14 places set on tribute to 64 men—4 men at 4*l.* 10s. per ton; 10 men at 5*l.* per ton; six men at 5*l.* 10*l.* per ton; six men at 5*l.* 15s. per ton; 18 men at 6*l.* per ton; two men at 6*l.* 5s. per ton; and 18 men at 6*l.* 10s. per ton.

GREAT HOLWAY.—May 2: Level Engine-Shaft: We are driving east on the Holway vein at the 80 fm. level; the lode is daily improving, producing lead and blende. This level is entering entirely unwrought ground, so that its present condition affords us every satisfaction. We hope soon to place men to drive north on the north and south vein, which crosses the east and west in the 80; we expect by this means to cut the Partridge lode at a point that will give us valuable stoping ground. Four men are laying down a tram-road from here to Roskell's shaft, and we shall use the latter to convey the stuff to surface.—Roskell's Shaft: This is completed to its present depth, and we have made it a splendid pit, both to carry on the deeper sinking and for hoisting purposes. During the past week we have purchased a Roanhead rock-drill, which we expect will be delivered on Monday. No time will be lost in its fixing, when we shall place full force to the deeper sinking of a pit to strike the Holway lode at a sufficient depth as should give us great returns.—Freehold Office Shaft: The lode here is producing good lead and blende, and from present appearances we have a good stope of ground before us. At Partridge shaft we have a fair pile of lead and blende stuff drawn to surface; from Level engine-shaft we have on bank good lumps of ore; whilst from the Freehold we have lead and blende dressed for the market.

GREAT RETALLACK.—T. Harris, April 27: The lode in the 53 east, west of the cross-cut, continues large, and yielding good blende, but not so much as when last reported, a patch of poor ground having been met with, which has temporarily diminished its value; now worth from 1½ to 2 tons of blende per fathom. We set the end to-day, to six men, at 3*l.* 10s. per fathom the month, and the men to be paid 40s. per fathom for stoping the back of the level, where we have a lode worth fully 3 tons of blende per fathom. We hope to resume working in the 57 by this day week, where we have a lode worth 3 tons of blende per fathom.

GREAT WHEAL RODD.—Thos. F. Hosking, April 30: No doubt you have been anxiously looking forward to the cutting of the lode, but I am yet unable to report that it has been reached. The greatest possible energy has been used in extending the drivage during the past fortnight; I consider the reason of its not having been cut into is that the same is taking a more northern direction at this point, or that the underlie may not be quite so much as at the other points of operation, which would of necessity take a longer drivage; however, be this as it may, we are sure to intersect it in a short time from the present, when we trust that the satisfaction of finding a rich lode will fully compensate for the waiting.

GREEN HURTH.—Wm. Vipond, April 26: We have finished the working west on new vein up to the rise; we shall now have either to begin driving the wagon-way upon it in the grey beds, or drive on the ore there is at the top of the rise; the former is certainly the most proper way to work it, but the driving will be dead work entirely. The stope on the third branch west of No. cross vein is getting into poorer ground; it is yielding now about 8 cwts. of ore per fathom. We have had a side branch to work off this week in the branch east of No. 1 before we could fairly begin with the stope above; it is yielding 16 cwts. of ore per fathom. In working back to No. 1 on the branch in water way it has been yielding 10 cwts. of ore per fathom, but in less than another month will work out this branch altogether. No. 3 cross vein has been very easy and workable this week, but is not yielding any ore to value. We have got the north end level cleared up to the cross-cut, and have now only the corner to take off and the rails to put down to the face. The working below adit is yielding well now—about 5 tons of ore per fathom. We shall finish the delivery of a wagon of ore to morrow (7 tons 4 cwts.), and shall send off all we can possibly dress next week.

— Wm. Vipond, April 30: Monthly Bargains: I have set the two men who were working on the new vein, west of No. 1 cross vein, to drive at present on the vein under the limestone at 58s. per fm.; ground worked by these men last month 5 fms. 4 ft. 6 in. The stope on the third branch west of No. 1 is yielding 8 cwts. of ore per fathom; it is set to two men, at 36s. per fathom; ground stoped last month 6 fms. 1 ft. The side and stope on the east branch will yield from 10 cwts. to 16 cwts. of ore per fathom; set to two men at 29s. per fathom; ground worked on this last month—stope 4 fms., side 2 fms. 1 ft. The working on the water-way is yielding 10 cwts. of ore per fathom; at present it is set to two men, at 29s. per fathom; ground worked on this last month—stoped 4 fms. 5 ft., side and driving 1 fm. 2 ft.; this stope was very poor most of the month, and the branch is nearly worked out. The cross-cut west from north level is set to drive to two men, as soon as they take the corner off and get the rails to the end, at 95s. per fathom; driven last month 2 ft. 6 in. The driving north on No. 3 cross vein is set to two men, at 52s. per fathom; driven last month 3 fms. 3 ft. The last two workings named are both dead work. We have finished the delivery of a wagon of ore to-day—7 tons 4 cwts. We estimate our present stock of ore in slimes and undressed bouse at 100 bings. The working below adit is yielding about 5 tons of ore per fathom; working by four men.

HARWOOD.—W. Tallentire, April 26: Herdship Level: We sometimes meet with pieces of lead ore as we drive north on No. 2 vein. We are driving 6 ft. below the limestone in grey beds and hazel; the vein is composed principally of spar. The south end is without change, and will yield 12 cwts. of lead ore per fathom. We have sent off to Mr. Dinning 8 bings of lead ore; dues, 1 bing; in all 9 bings.

HINGSTON DOWN CONSOLS.—Thomas Richards, May 2: Bailey's Shaft: In the 172 east the lode is exceedingly promising, containing capel, quartz, mundic, and copper ore, and is worth 12*l.* per fathom, and from present appearances a further improvement is shortly expected. The stope in the back of this level continues of same value—20*l.* per fathom. In the 160, west of Nicholl's winze, the lode is large, the part being carried, 4 ft. wide, will produce about 6*l.* worth of ore per fathom. The sampling on Friday last was 153 tons.

KIT HILL.—H. Bennett, May 2: The lode in the western is still of a very promising character. There is no change at any other point.

LADYWELL.—Arthur Waters, May 2: Nothing new here since my report of last week. I now beg to enclose certificate for 25 tons lead ore delivered to Mr. George Bury. Our next sampling takes place at the usual time.

LIVINGSTONE CONSOLS.—Wm. Vivian, May 2: In the 40, driving west of north shaft, on Wheal Kitty flat lode, the ground has changed. We are now making good progress in driving at this point. The lode is producing good stones of copper ore.

LOVELL (THE).—J. Prisk, E. Kempthorne, May 2: At our monthly setting on Saturday last we set the following bargains:—The Hownan shaft to sink below the 40, by 12 men, at 22*l.* per fathom; the lode is 8 ft. wide, worth 30*l.* per fathom for length of shaft (13 feet). The principal tin ground here seems to be dipping east pretty much, consequently we shall incline the shaft a little in that direction. The 40, east of Hownan shaft, by six men, at 11*l.* 10s. per fathom; here we have a good improvement, the lode being worth for the part carried (6 ft.) 30*l.* per fm., and we have also a large quantity of lode standing in the north side of this level, which, no doubt, is of the same quality as the end—this will be taken down by stoping as the end is advanced. A stope in back [illegible] 36, east of winze, by four men, at 6*l.* per fathom; lode 8 ft. wide, worth [illegible] fathom. A stope in the bottom of the 30, west of No. 1 winze, by four men, at 6*l.* per fathom; the lode is worth 9*l.* per fathom. A surface shaft, west of the engine shaft, by four men, at 5*l.* per fathom; we have a large lode here, and in sinking a fathom or so more at 5*l.* per fathom we expect to have a great quantity of paying tinstone from this point at small cost. The shaft is about 4 fms. 3 ft. below the surface. We are pleased to say

the mine has much improved in the last fortnight, especially eastward, where all the principal tin ground seems to be dipping.

MELLANEAR.—John Gilbert, May 1: We set the following bargains on Saturday last:—No. 2 rise, in back of the 50, west of Gundry's shaft, to four men, at 4l. 10s. per fathom; the lode in this rise is 5 ft. wide, worth 6 tons of copper ore per fathom. The stope in bottom of the 67, west of the cross-course, to four men, at 2l. 5s. per fathom; the lode is 8 ft. wide, worth fully 7 tons of ore per fathom. The stope in back of the 67, east and west of No. 1 rise, to four men, at 2l. 5s. per fathom; the lode is 5 ft. wide, worth 6 tons of ore per fathom. The stope in the back of the 67, east of No. 3 rise, to four men, at 2l. 15s. per fathom; the lode is 6 ft. wide, worth 5 tons of ore per fathom. The stope in back of the 80, east of Gundry's shaft, to four men, at 2l. 10s. per fathom; the lode is 6 ft. wide, worth 6 tons of ore per fathom. The 90, west of Gundry's shaft, to four men, at 4l. 10s. per fathom; the lode is producing a good deal of mundic, and about 1 ton of copper ore per fathom. The winze in bottom of the 60, west of Gundry's shaft, to four men, at 4l. 10s. per fathom; the lode is 4 ft. wide, worth 5 tons of ore per fathom. The 80, west of Gundry's shaft, to four men, at 4l. per fathom; the lode is 4 ft. wide, worth 2½ tons of ore per fathom. There is a large quantity of water coming from the end, but the ground is favourable for driving. Since the skip shaft below the 90 has been communicated to the 100 the men have been engaged in putting down the skip-road, cutting plats, &c., in the 90 and 100 fm. levels, and we expect to get everything ready for drawing from the 100 by the end of this week, after which we shall clear out the 100 and commence to drive west. No. 2 rise, in back of the 50, east of Gundry's shaft, to four men, at 4l. per fathom; the lode is 3 ft. wide, worth 4 tons of ore per fathom. We shall put this rise about 3 ft. higher, and then commence to drive a 40 fm. level west from the top of the rise. The 70, west from Gundry's shaft, to four men, at 6l. per fathom; the lode is 4 ft. wide, worth 2 tons of ore per fathom. The 60, west of Gundry's shaft, to four men, at 4l. per fathom; the lode is 3½ ft. wide, worth 3 tons of ore per fathom. The 40, west of the skip-shaft, to four men, at 3l. 12s. 6d. per fathom; the lode is 3 ft. wide, worth 1 ton of ore per fathom. The 50, west of Gundry's shaft, to four men, at 4l. per fathom: the lode is 4 ft. wide, worth 2½ tons of ore per fathom. We have put these men to sink a winze a little behind the end, to communicate with the rise in back of the 60, and with good speed we expect to hole by the latter part of next week. This will improve the ventilation of the upper levels. The rise in back of the 60, west of Gundry's shaft, to four men, at 4l. per fathom; the lode is 4 ft. wide, worth 2 tons of ore per fathom. Gundry's shaft to sink below the 90, to nine men, at 27l. per fathom; this shaft is now down 8 fms. 1 ft. 6 in. The ground is still very favourable for sinking, and we expect to sink about 2 fms. again this month. The stope in back of the 60, east of Gundry's shaft, to four men, at 2l. 12s. 6d. per fathom; the lode is 5 ft. wide, worth 6 tons of ore per fm. The 30 cross-cut, south of Gundry's shaft, to six men, at 2l. per fathom. Judging from the underlie of the lode at present, we shall have to drive this cross cut south about 45 fms. to intersect the lode. We have also four men at Gundry's shaft cutting trip-plat, &c., in the 70.

MONYDD GORDDU.—J. G. Green, May 1: Yesterday was our measuring and setting day, and below I beg to hand particulars. The shaftmen have not completed their 10 fms. stent. Progress is at present very slow, the ground tight. The 24 west is set to six men at 100s. per fathom; the end is poor, and in a few fathoms further driving I intend cross cutting the lode to full width to prove its value. The driving on north east branch has has not led to anything of importance, and I shall now put the men to drive on the main lode eastward. The 12 cross cut has not yet cut the lode; total distance driven 28 fathoms, re set at 150s. per fathom. The 12 west stope, to six men, at 70s. per fathom. The 12 east stope, on south lode, to two men, at 70s. per fathom. The 12 east stope, on junction, to eight men, at 65s. per fathom. Aggregate value of three stopes 30l. per fathom, and we are accumulating a good stock of orestuff for the dressing-floors at these points. I have put two men to strip lode in the side of the winze below the 12, about 3 fms. above the roof of the 24; lode looking splendid, worth full 2 tons per fathom. Surface works proceeding satisfactorily. I am awaiting particulars of stone-breaker so as to prepare the foundations.

MORFA-DDU.—T. Mitchell, May 2: We have commenced the new level from the bottom of the engine-shaft, and have let the driving at 4l. per fathom to commence with. We have also fixed ladder-road to the new bottom level, and shall put in the dividing plank, &c., as soon as possible, after which everything will be made complete and in good working order to the present bottom of the mine.

NEW SOUTH MERLLYN.—R. Rowlands, May 2: Our discovery in the south level turns out very satisfactory; our operations north also look very well. We sent off last Friday 6 tons 12 cwts. of lead, and have now a good pile towards the next sampling.

NORTH LAXEY.—John Sowden, April 30: We have driven through the small pitch in the 84 end, and the lode is very much improved, now 1 ft. wide, composed of soft spar, blende, and lead, which has to come to the dressing-floors. It is a much better looking lode than we had in the level above at this point, and we expect to open out good stoping ground as the end advances. There is a slight improvement in the stopes; the present value of which is from 12 cwts. to 15 cwts. of lead per fathom.

NORTH TRESKERBY.—John Nancarrow, Alexander Nancarrow, May 1: The bearers and cistern are put in and lift fixed at the 12, which works exceedingly well. We have also put in new rod, with stays and rolls complete, divided and cased the shaft, and got all complete for drawing from the 12. The shaft is set to 12 men, at 17l. per fathom, and we hope now to make good progress. There is no change to report in the 12 east. The 12 west is improved; we have a strong orey lode, from 2 to 3 ft. wide, and likely to improve. The winze below the adit looks better, and seems to be getting into the run of ore we have in the 12 below. We have not made much progress in the adit west, as the men have been engaged at the capstan, &c. We have commenced clearing Kellaway's shaft to make some proof of the fine gossan there, but as we are only down a few fathoms we can see little of it yet.

PARYS MOUNTAIN.—T. Mitchell, May 2: A change has taken place in the 50 cross-cut south this week; the ground is getting easier, and letting out a strong stream of water. I hope soon to have something cheering to report from this place. The 90 west continues to yield a little copper ore and sulphur, and looking much the same as on the setting day.

PENNANT BARYTES.—May 2: The 133 yard level east is letting out a quantity of water, which must be coming from a porous lode. We shall urge on both this level and the corresponding one west so as to reach the runs of ore proved in the upper levels, which I think will consolidate and become of considerable importance at our present depth. There is no other change to note. The stopes in the 60 and 80 will yield together about 6 tons of mineral to the fathom.

PLYNLIMMON.—J. Garland, May 2: New Shaft: The cutting of plat and widening shaft for brace at the 36 has been completed, and the men are now engaged in blasting down the eastern brow of the shaft to make room for the machine kibble to be brought into the plat. The 36, east of Jones's winze, has been communicated with the same level west from Herbert's winze, and all squared up: I am pleased to say they correspond well with each other as to being the same level. Owing to the very hard nature of the ground this has been a long and tedious piece of work; this level is now open for a length of 70 fathoms east of shaft. The men are now engaged in laying down tramroad and clearing accumulated stuff. The driving of the 36, east of Herbert's winze, has been resumed, and some good stones of lead ore have been broken therefrom; I hope to report an improvement here shortly. We are still very short of hands on our dressing-floors, but with those we have we are doing all we can towards another sale, and with a few additional hands should soon be in a position to sample another 20 tons of lead ore. We have a fair supply of water, and the machinery thoughout the mine is in fair working order. In another week from date I hope to be in a position to start a sufficient number of new stopes that will ensure an output which will more than cover mine costs.

PRINCE OF WALES.—John Andrews, May 1: There is no change in the deep adit driving west of Vigar's shaft.

ROMAN GRAVELS.—Arthur Waters, May 2: The 110 cross cut, east from the bottom of the new engine-shaft, is now into the main part of the lode, which we expect to find 8 to 10 ft. wide. As far as we have cut into the vein a good looking spar, with stones of soft lead ore, have been brought to view. In the 95, south of this shaft (in which 6½ ft. were driven this past week with machine drill), the lode is worth 3 tons per fathom, and improving. The 80, south of shaft, is worth 4 tons per fathom. The 65 south is in a wide lode, which is split into several divisions; present value 3½ tons. Stopes and other points as for some time past. We have suspended three stopes on the east lode, and dismissed a few of our boys on the dressing floors with a view to economy. Our next sampling of 180 tons will be held at the usual time.

ROOKHOPE.—James Blenkiron, April 27: Our setting at the above mines was on the 26rd inst., when the men were placed as follows:—Eight men stoping over the 15, east of engine-shaft, at 30s. per fathom; worth 18 cwts. of ore. Four men dis ring out branch lode (stoping), at 70s per fathom; worth 15 cwts of ore; this ground will be cleared up to the adit level this month. Four men driving the 42 east, at 55s. per fathom; no ore to value. Four men rising east of Gin shaft, in the 42, at 35s. per fathom; worth 15 cwts. for ore. Four men driving west from rise, east of Gin shaft, at 35s. per fathom (42 fm. level); opening out for stoping in 4 fm. limestone, worth at present 12 cwts. for ore, with indications of improvement. Four men rising east of engine shaft, at 30s. per fathom; worth 10 cwts. for ore. Four men stoping east of engine shaft, in the 4?, at 25s. per fm; worth 12 cwts. for ore. Eight men enlarging reservoir and getting out rubbish for new reservoir in old ironstone mine, at ?d. per cubic yard. I cannot state anything definitely respecting old level and storage for water until we are able to inspect the same after the rubbish is cleared away, which we hope will be done by the pay. There has been some delay in dressing for want of water, and also on account of rollers breaking on crusher, and piston big engine blowing packing; both are now secure and repaired. We have sampled 40 tons of ore, and hope to increase the quantity next month. The general appearance of the mine has improved a little since last month, and we hope to open some considerably better ground over the 42 this month.

SOUTH CONDURROW.—W. Rich, W. Williams, H. Abraham, April 30: We have holed the Plantation shaft to the rise in the back of the 70; this has given good ventilation in the western part of the mine. The shaft will now be enlarged below the 50 to take double skip-road, and a cross cut started north at the 50 to intersect the West Basset lode, also the tin lode. We are driving the 30 cross-cut north to intersect the tin lode at the engine-shaft. The 40 end east yields a little tin. The 40 west is worth 8l. per fathom. The 50 west is worth 7l. per fathom. We have started a rise in back of the 50 east of middle cross cut to prove the lode, and to ventilate the 40 end west. The 50 end, west of the west cross-cut, is worth 20l. per fathom. The 70 west is worth 10l. per fathom. The 80 east is worth 7l. per fathom. The 93 west is worth 10l. per fathom. The 93 east is worth 9l. per fathom.

SOUTH DARREN.—Henry James, May 1: Setting Report: At our last setting all the bargains were let for two months take, with the exception of the shaft, which is set to sink 4 ft., at 22l. per fathom, by nine men; the lode is still intermixed a little with lead. The 100 end east to drive towards the shaft, by four men, at 10l. 10s. per fathom; no change in the lode to call for remark. The 100 end west to drive, by four men, at 10l. 10s per fathom; lode worth 10l. per fm. The 90 winze to sink 12 ft. long, by nine men, at 19l. per fathom; lode worth 47l. per fathom. The 90 end to drive, by six men, at 8l. 10s. per fathom; the lode is hard, and getting more mixed with lead and copper. No. 1 stope in the back of this level, by six men, at 3l. 15s. per fathom; lode worth 25l. per fathom. No. 2 stope, by six men, at 4l. per fathom; lode worth 28l. per fathom. The 80 winze is suspended for a short time to allow us to clear off some orestuff above it. The 80 forebreast to square up to the end of the winze at 6l., and to drive from this point at 7l. per fathom, by six men; lode more mixed with copper ore—present value 12l. per fathom. To strip the side and stope the back of this level, by six men, at 3l. per cubic fathom for stripping the side, and 4l. per fathom for stoping the back; lode worth 25l. per fathom. No. 1 stope in the roof of this level is suspended. No. 2 stope in the back, by four men, at 3l. 10s. per fathom; lode worth 10l. per fathom. On Monday next we shall sample 40 tons silver-lead ore. All the machinery working well.

SOUTH DE LRESBY.—T. Bennetts, April 30: The ground in the cross cut driving from No. 1 to No. 2 lode is very much more favourable for driving. The ground is strongly mixed with blende and mundic, which is a good indication that the lode will be productive for lead ore when intersected; and as at surface it is from 8 to 10 ft. wide, spotted with lead throughout, we expect a good leading lode at the intersection. We shall commence to morrow to clear the adit level north, which I hope to get cleared in the course of the week, when we shall commence to drive north on No. 1 lode. This lode proves to be very productive, and where opened upon in the old shallow workings has been worked to surface.—No. 2 Adit: Nothing has been done here since my last report, owing to a scarcity of labour, but I hope to get some men this week, when we shall commence to drive on two promising lodes; also to begin sinking the shaft on the large lode. I would strongly recommend the driving of the deep adit level at once by a full force of men. This level will intersect all of the lodes, and I believe will open up a very valuable property at a small cost.

SOUTH MOLTON CONSOLS.—T. Harris, T. May, May 2: The lode in the new shaft is about 3 ft. wide, made up of capels, with veins of quartz intermixed with gossan; a strong and well defined lode. The adit level cross-cut is now in the shelf, but will soon be making good backs and get into the settled rock.

SOUTH ROMAN GRAVELS.—May 2: Shelve Deep Adit: We have driven north on No. 1 joint 2 fms. 2 ft. 6 in., and have had a small leader of spar in the last 3 ft. driving. The first we have ever seen since we started. The level north on No. 2 is driven 5 fms. 5 ft. We met with nice spots of ore in the middle or main string.

ST. PATRICK.—W Frances, May 1: The cross-course in the 120 yard cross-cut north still continues loose, and there is spar in some of the boulders, embedded in a good mixture of mineral compounds, with firm heading wall. The progress is very satisfactory here, and also in the 60 yard cross-cut north, in the chert measures. In the cross-cut we are within 30 yards of the line of some trial shaft at surface, in which a little lead has been found recently, and we have reasons for supposing a rich vein of ore will be found at this cross-cut shortly.

TANKERVILLE.—Arthur Waters, April 30: Watson's shaft is 11¼ fms. below the 192; ground as for some time past. The 192 west is in a lode 4 ft. wide, worth 1½ ton of lead ore per fathom. The lode in the 192 east is split into branches, worth 10 to 12 cwts. per fathom. The winze below the 192, east of shaft, is down 3½ fms; lode worth 2 tons per fathom. The winze in the 192 fm. level west is down 6½ ft.; lode worth 1 ton per fathom. Stopes yielding ore as for some time past. We have weighed the whole of the 100 tons into the bin, and have also a few tons left towards next sampling.

—Arthur Waters, May 2: There is no material change here since my report sent to the board meeting yesterday. Watson's shaft is now 11 fms. 4 ft. 6 in. below the 192; ground as for some time past. We are preparing another lot of ore for next sampling.

TEMPLE.—May 1: In the No. 1 level the lode carried is from 5 to 6 ft. wide, of the most promising appearance, and at present producing blende in considerable quantities as well as a little copper; the end, however, is some distance behind the point where the lead was cut in the upper levels. In the No. 2 level the lode presents a very favourable appearance, composed chiefly of spar and lead; of the latter more than 1 ton per fathom, which quantity appears to be increasing as the level is extended. The tramway from this level to the dressing floors is nearly completed. In the No. 3 level the lode shows an increased production of lead, at present about 16 cwts per fathom. The progressive increase here is more marked than in No 2. On the whole the appearance of the mine is most satisfactory.

TOLGUS CONSOLS.—W. C. Vivian, May 2: In the 40 cross-cut north we have now advanced 22½ fms. from the engine-shaft, and have, therefore, according to my calculations, only about 7½ fms. more to drive to reach the lode—(say) six weeks' driving—when, from the indications presented, we seem likely to cut into a copper formation corresponding with the rich discoveries of the same metal which have been made in this locality. The branch intersected in the cross cut has been opened on westward to the extent of 5 ft., and is now 6 in. wide, the greater part of it being strong yellow copper ore. It is evidently connected with a large deposit of copper, probably the lode to which we are driving in the cross-cut. In the 40, west of cross-cut, on the south lode, the lode is 4 ft. wide, and producing strong yellow copper ore, with crystallised blende, whilst presenting highly favourable appearances for further improvements. I consider that our prospects altogether have never been so good as at present.

TREBEIGH CONSOLS.—J. Gifford, May 2: In the 45, east of the engine-shaft, the lode is 2 ft. wide, of the same character as last stated. In the 45, south of the engine-shaft, the branch is still poor and small, but the ground is more favourable for progress and letting out a little water. In the grass shaft the Ruby lode is 3 ft. wide, of a promising character, and producing good stones of lead ore.

TRELEIGH WOOD.—William Goldsworthy, May 2: The men are making fair progress in driving the 56 west; the lode is still large, and of a very promising character, producing stamping work. The lode in the 44 west is 7 ft. wide, composed of peach, mundic, and tin, worth for the latter about 6l. per fathom. Seeing this end is just under the rich tin ground we had in the 34, we hope to see an improvement here shortly. There is no change to notice in any of the other bargains since my last report. Saturday being our pay and setting day, a full report will follow.

WEST ASSHETON.—George Rickards, May 1: The 60 west has been let to the shaftmen to drive and carry a portion of the lode at 6l per fathom. The No. 5 pitch over this level is let to four men, at 5l. per ton for lead ore. No. 4, to four men, at 5l. per ton for lead. No. 3, to four men, at 2l. per ton for lead. No. 2, to two men, at 2l. 15s. for lead. No. 1, to two men, at 6l. per ton for lead. The 50 to drive west, by four men, at 30s. per fathom and 6l. 10s. for lead ore in stoping the back. No. 1 pitch over the 50, to four men, at 5l. per ton; all the pitches have 10s. per ton for blende. The blende being considered an important product in the yield of the mine, will have the attention due to its importance paid it. There is no material change in the prospects of the mine during the past month; the yield of ore has greatly increased, and is likely to continue. Our new foreman ore dresser has arrived here to-day, and fully confirms my opinion of the value of the blende, as well as the great percentage of loss in the former mode of dressing ores. Our next sampling will take place in the course of a few days.

WEST GODOLPHIN.—J. Pope, April 31: Setting Report: Caunter: The 80 (Wilson's engine-shaft) to eight men; we have put these men to divide and case the shaft from the 70 to the 50; as soon as this is completed they will commence cutting kibble plat at the 80, after which they will resume sinking for bearers and cistern. The 80 to drive north, by eight men, at 12l. per fathom; lode 8 in. wide, producing a little tin. Wilson's: The 70 to drive west by six men, at 6l. per fathom; the lode is 4 ft. 6 in. wide, worth 10l. per fathom, producing tin and copper; there is more lode standing in the north side of the level. The 70 to drive east, to six men, at 8l. per fathom; the lode is 2 ft. wide, producing low-price tinstuff. The 70 to drive south on caunter lode, by one man and one boy, at 4l. per fathom; the lode is 1 ft. 6 in. wide, worth 3l. per fathom, producing tin. The 60 to drive west, on the Pink lode, by one man and one boy, at 9l. per fathom—lode small. The 60 to drive north, on the caunter lode, by two men, at 5l. 10s. per fathom—lode 1 ft. 6 in. wide, producing low-price tinstuff.—Wilson's Lode: To stope in the bottom of the 60 west, by six men, at 4l. per fathom; the lode is 6 ft. wide, worth 8l. per fathom—producing tin. To stope in bottom of the 60 west, by six men, at 4l. per fathom; the lode is 5 ft. wide, worth 7l. per fm., producing tin. To stope the bottom of the 60 west, by six men, at 4l. per fm.; the lode is 5 ft. wide, worth 8l. per fathom, producing tin and copper. To stope in bottom of the 60 west, by six men, at 4l. per fathom; the lode is 4 ft. 6 in. wide, worth 8l. per fathom, producing tin and copper. To stope in bottom of the 60 west, by six men, at 5l. per fm.; the lode is 8 ft. wide, worth 10l. per fm., producing tin and copper. To stope in bottom of the 60 west, by six men, 6l. per fathom; lode 8 ft. wide, worth 10l. per fathom, producing tin and copper. To stope in the back of the 60 west, by four men, at 3l. 10s. per fathom; lode 3 ft. 6 in. wide, worth 6l. per fathom, producing tin. To stope in the back of the 60 west, by four men, at 3l. 3s. per fathom; the lode is 2 ft. wide, worth 5l. per fathom, producing tin. The 60 to drive west, by two men, at 6l. per fathom; the lode is 3 ft. wide, producing low price tinstuff. To stope in bottom of the 60 east, by four men, at 4l. per sathom; the lode is 6 ft. wide, worth 8l. per fathom, producing tin. To stope in bottom of the 60 east, by six men, at 3l. 10s. per fathom; the lode 5 ft. wide, worth 6l. per fathom, producing tin. To stope in the bottom of the 60 east, by 12 men; the lode is 12 ft. wide, worth 15l. per fathom; the tin in this stope is chiefly in floors, which goes off from the lode in the north wall; so it is hardly possible to set this stope. The men are working as directed, and are doing very good labour. To stope in back of the 60, east of Wilson's, by three men, at 5l. per fathom; the lode is 9 ft. wide, worth 12l per fathom, producing copper. To drive the 50, west of Wilson's, by one man and one boy, at 5l. 1os. per fathom; the lode is 3 ft wide, producing low price tinstuff.—Pink Lode: To drive the 50 west, by two men, at 10l. per fathom; the lode is 1 ft. 3 in. wide, producing good stones of tin. To drive the 40 stope west, by two men, at 5l. 10s. per fathom; the lode is 1 ft. 6 in. wide, worth 3l. per fathom, producing tin. The 20 stope rising against new shaft, by two men, at 6l. per fm.; the lode is 1 ft. 6 in. wide, producing low-price tinstuff. We are expecting to hole to the shaft this week. There are six men blasting down the sides of the 70 west, on Wilson's lode, who are breaking fair quality tinstuff.

WEST SKEAR.—H. Stephens, W. Bennetts, May 2: The roof of the engine house is completed, and everything is being done as fast as possible in preparing for heaving in the engine. There is nothing new underground since our last report.

WEST TANKERVILLE.—A. Waters, May 2: The ends and stopes here are yielding ore as for values given in my last report. We have to day reduced the number of workpeople, which will effect a saving of about 30l. per month. We shall do our utmost to get 40 tons for the next sampling.

WEST WHEAL TOLGUS.—May 1: Taylor's Shaft: The men are cutting the ground near the bottom of the shaft for the standing penthouse, which will be completed this week, and we hope to do something towards putting the skip road below the 135. We are hastening this work as fast as possible, as we want to get more men down to open out the lode in the 145, which we cannot do until the road is put down. The lode in the 145 west is about 5 ft wide, yielding 3 tons of ore per fathom. We have put the men to stope down the south ground near the end, in order to make sure if there is any more lode standing; we shall prove something of it this week. The stope west of No. 1 winze under the 135 is yielding 12 tons of ore per fathom. The lode in the 135 end west is all the width of the end, with a little ore, a vugh now showing in the bottom of the end, which looks like a change taking place; the end is still hard. The stopes in the back of this level are yielding very well. The lode in the 126 west is 2 ft. wide, with a better appearance—a little ore, but not enough to value. The ground in the 126 cross-cut south is changing, getting better, with a little water; we think the lode is close at hand. The ground was very hard last week. We only met with the change last night. The lode in the 115 west is without alteration, being 2 ft. wide, composed of iron and quartz. In Richards' shaft the lode is 4 ft. wide, with stones of ore, but not enough to value. The lode in the 75 end west is small and poor, and the same may be said of the 65 end, with the exception of the ground getting whiter—better killas.

WHEAL CREBOR.—John Andrews, April 29: Setting Report: The 120 end to drive east, by four men, at 6l. per fathom; the lode is 4 ft. wide, yielding stones of ore, but not enough to value. No. 1 stope in the back of the 120, by six men, at 4l. 5s. per fathom; the lode is 4 ft. wide, worth 10l. per fathom. No. 2 stope in back of the same level, by six men, at 3l. 10s. per fathom; the lode is 6 ft. wide, worth 20l. per fathom. To drive the 108 end east, by two men, at 4l. fathom; the lode is small and poor. To drive the 73 end east, by two men, at 4l. per fathom; the lode is 3 ft. wide, composed of quartz and capel. To drive the 48 end east, by two men, at 6l. 10s. per fathom; the lode in the end is small and unproductive. To sink the new shaft below surface by nine men, at 17l. per fm.; the lode in the shaft is 4½ ft. wide, consisting of quartz, capel, mundic, and a little copper ore—a promising-looking lode.

WHEAL GRENVILLE.—T. Hodge, May 1: Goold's shaft is 8 ft. below the 150, the ground in which is moderate for sinking. The 140 east end is improving as we extend, worth about 6l. per fathom.—Western Shaft: The water is 2 ft. above the back of the 150. We are now engaged sinking down pipes to convey the water back to Goold's shaft through the 150. The 150 east end is worth 10l. per fathom. The 140 east end is worth 8l. per fathom. The 130 west end is worth 6l. per fathom. No other change in the bargains. All surface work is being pushed forward with the utmost despatch.

WHEAL KITTY (St. Agnes).—S. Davey, R. Harris, April 27: The men in the various bargains throughout the mine have in the week and are still desuing the lode, consequently there is nothing new to report.

WHEAL PRUSSIA.—W. Tregay, May 2: At Tregay's shaft the lode produces 1 ton of black tin per cubic fathom; lode 6 ft. wide. In the 40 east end the lode will produce 10 cwts. of black tin per fathom. In the 40 west the lode will yield 1½ ton of black tin per fathom. In the 20 west the lode will produce 10 cwts. of black tin per fathom. In the deep adit west the lode produces about 5 cwts. of black tin per fathom.

WHEAL RUSSELL.—John Bray, May 2: The principal part of the lode in the 25 is from 1 to 2 ft wide, with strong capel, quartz, and a little mundic, worth about 1 ton of ore per fathom. The lode in Maria shaft is 5 ft. wide, composed of gossan, capel, &c., spotted with mundic and copper ore. The whim is erected, and works well. The men are making good progress in sinking, and I hope for an early improvement.

WHEAL UNY.—Wm. Rich, M. Rogers, April 29: The lode at Hind's shaft carries a little tin. The 160 end, east of Goodinge's shaft, is without alteration to notice. The ground is easier for driving in the 160 west, and the lode worth 8l. per fathom. The lode in the 150 west is still within the influence of the cross-course, and is disordered by it. The end is worth 7l per fathom. The rise in the back of the 150 west is worth 25l. per fathom. The 150, east of King's, yields low quality limestone. The rise in back of this level is worth 9l. per fathom. The 140 west is worth 6l. per fathom. The back of the 60 west is worth 9l. per fm. We sold on Saturday last 19 tons 12 cwts. 3 qrs. 20 lbs. of tin, the produce of the past fortnight.

WHEAL NEWTON.—H. Bennett, May 2: Our stopes continue to yield a fair quantity of good silver ore. All our other bargains remain much the same as usual. We have sampled this week 25 cwts. 3 qrs. of silver ore, assaying 1574 ozs. to the ton, and over 10 tons assaying 252ozs. to the ton. Next Saturday being our setting, a full report shall follow.

CAUTION.—We are requested to state with respect to the Carn Marth Copper Mine (Limited)—the prospectus of which appeared in the Journal in July and August last—that no grant had been obtained from the owners to work the property, and consequently no right existed to issue shares therein, and we are asked to insert this as a caution to intending investors in that company as at present organised.

THE VAN MINE—MONTHLY REPORT.

May 2.—Seaham's shaft is down to the 120, but before we commence crossing we want to sink another 6 or 8 feet, for loom for water. There is very nice ground coming in on the north-east side of the shaft, containing spots of lead, blende, and spar. The 105, west of shaft, is worth 4 tons of lead ore per cubic fathom. The same level, east of shaft, is driving by the side of the lode. The 90, west of shaft, is worth for lead ore 3 tons per cubic fathom. The stripping of the lode to full width in the side of this level, at 80 and 70 fathoms west of shaft, is worth for lead ore 32 cwts. per cubic fathom. The stopes in the back of the 90, east and west of shaft (eight in number), are worth on the average 45 cwts of lead ore per cubic fathom—average width 25 ft. The 90, east of shaft, is driving by the side of the lode. The stripping of the lode to full width in the side of this level, at a point 50 fathoms east of shaft, is worth 1¼ ton of lead ore per cubic fathom. The 7 fm. levels, east and west of shaft, are driving by the side of the lode.

The 120 winze sinking below the 75 west is down 6 fms.; this winze is sinking in advance of the 90 end, and in the bottom of the winze we cut into ore ground worth 25 cwts. of lead per cubic fathom. The stopes in back of this level, eleven in number, are worth on the average 45 cwts. of lead ore per cubic fathom; average width 15 ft. 6 in. The 60, east and west of shaft, are driving in the soft by the side of the lode. The stopes in the back of the 60, eleven in number, are worth 20 cwts. of lead ore per cubic fathom; average width 15 ft. The three stopes in the back of the 45 are worth 22 cwts. of lead ore per cubic fathom; average width 14 ft. 6 in. The permanent levels are pushed forward as usual.—Surface: All surface work is progressing as usual. Machinery all in good order. Our monthly sale upon 400 tons lead ore and 150 tons blende takes place to day.—W. WILLIAMS.

UTILISATION OF SMALL COAL.

Until June, 1868, no attempt had been made in Europe or America to manufacture by mechanical means from anthracite coal dust artificial fuel for domestic use. The Anthracite Fuel Company, of Fort Ewen, U.S., after many failures and disappointments at length succeeded in establishing the enterprise on a satisfactory basis. In order to manufacture a fuel which could be used in all kinds of furnaces it was evident that the lumps could not exceed a certain size, and machines to that effect were invented by Mr. Revollier-Bietrix, of St. Etienne, France, and by Messrs. Mazeline and Cuillard, of Havre, but the production of these machines in 24 hours did not exceed 48 gross tons, in lumps weighing each 1 kilo. 250 grammes. No better results have been obtained in Europe to this day, and no smaller lumps have been manufactured.

For ten years Mr. E. F. Losseau, of Philadelphia, has applied himself to the production of a large output of lumps of small size. He divised and designed to the best of his ability several machines which his experience had told him were best adapted to the continuous and automatic production of the lumps of a small size, the main machine being the press. He had previously made a good many experiment on a small scale, which had demonstrated beyond a doubt the practicability of the process. As is usually the case, the large machine did not work so well as the small one; it had to be modified several times, according to what practical experience demonstrated to be an absolute necessity. One modification suggested another, until at last, in spite of all prophecies to the contrary, he succeeded in getting the press to work in a very satisfactory way. The production is 137½ tons in 10 hours, the lumps weighing but 2 ozs. each.

The waterproofing process has been tried several times, and has been found to work well. Instead of condensing the vapours of the benzine as was at first intended, they were compelled, in order to avoid accidents, to remove them by a suction fan. Those vapours pass through a system of pipes; they are mixed in those pipes with 20 times their volume of atmospheric air so as to render them inocuous, and they are then expelled above the roof of the building. It must not be forgotten that the process applied and the machines used were entirely novel, and considering all the difficulties in the way of a success, the results obtained have been very satisfactory.

ROTATORY STEAM-ENGINES.—A metal cylinder is, according to the invention of Mr. J. COUGNET, of Brussels, mounted on a frame and provided with covers through stuffing-boxes, in which a rotatory shaft passes. Upon this shaft and within the cylinder is keyed the nave of a rotatory piston which extends from the nave to the inner surface, and from end to end of the cylinder, a tight joint between the piston and the ends and inner surface of the cylinder being maintained by metallic packing consisting of blades or strips of brass, or other suitable antifriction metal, let into slots formed in the sides and end of the rotatory piston, which blades or strips of metal are forced outwards against the surface of the cylinder and cylinder covers by steam introduced into the slots through suitable holes in the said piston. A tight joint is also maintained between the nave of the piston and the cylinder covers by annular blades or strips of antifriction metal let into annular slots formed in the ends of the said nave; the said annular packing being pressed outwards in contact with the cylinder covers by steam admitted into the said annular slots through suitable holes. The passage of the piston from one to the other of the chambers into which the cylinder is divided is secured by the use of sliding plates. Steam is admitted to the cylinder through a suitable channel formed by a steam-jacket round the upper part of the cylinder, and the steam is discharged from the cylinder by channels formed by the steam-jacket round the lower part of the cylinder. On each side of the said cylinder is a steam-chest with a steam port governed by a slide valve or other suitable means, and the cut-off may be regulated by any suitable means. The steam in the steam-chests passes partly through a channel to behind the sliding plates, so as to press them inwards. Sometimes two rotatory pistons are used, one projecting from each side of the nave upon the rotatory shaft. The steam is then admitted and discharged on each side of the cylinder simultaneously. When the engine is to be set in motion, the sliding plates being both closed, so as to divide the cylinder into two parts, steam is admitted between the face of the piston and one of the said plates, and forces forward the said piston towards the second plate; meanwhile, the cam surface forming the back part of the piston in its rotation forces out the second plate, and causes it gradually to retire into its chamber, the cam surface gradually filling the space between the said plate and itself, and expelling any steam behind it through the exhaust channel. When the piston has passed the second plate the plate returns into position

in the cylinder, and steam being admitted between it and the piston, the same result is produced, and the piston continuing its rotation the same action is repeated.

The Mining Market: Prices of Metals, Ores, &c.

METAL MARKET—LONDON, MAY 3, 1878.

IRON.	£ s. d.	£ s. d
Pig, GMB, f.o.b., Clyde..	2 9 9-	—
,, Scotch, all No. 1 ...	2 11 0-	3 10 0
Bars, Welsh, f.o.b. Wales	5 2 6-	5 5 0
,, ,, in London.	5 15 0-	—
,, Stafford., ,, .	6 15 0-	7 10 0
,, in Tyne or Tees ...	5 10 0-	5 15 0
,, Swedish, London ..	9 10 0-	—
Rails, Welsh, at works..	4 17 6-	5 0 0
Sheets, Staff., in London	8 5 0-	8 10 0
Plates, ship., in London	6 15 0-	6 17 6
Hoops, Staff.	7 15 0-	8 0 0
Nail rods, Staff. in Lon.	6 10 0-	7 0 0
STEEL.		
English, spring 13 10 0-	19	0 0
,, cast	30 0 0-	40 0 0
Swedish, keg.... 14	0 0-	—
,, fag. ham. 15	0 0-	—
LEAD.		
English, pig, common...16 17 6-		—
,, ,, L.B.....17	0 0	17 2 6
,, ,, W.B. 17	10 0-	—
,, sheet and bar..18	0 0-	—
,, pipe.....18	10 0-	—
,, red 19	15 0-	—
,, white 24	10 0-	26 10 0
,, patent shot ...22	10 0-	—
Spanish 16	10 0	16 12 6
NICKEL.		
Metal, per cwt 18	0 0-	20 0 0
Ore, 10 per cent. per ton.24	0 0-	26 0 0
QUICKSILVER.		
Flasks of 75 lbs., ware. 7	0 0-	—
SPELTER.		
Silesian..... .. 18	0 0-	18 5 0
English, Swansea 21	0 0-	—
Sheet zinc 22	0 0-	23 10 0

TIN.	£ s. d.	£ s. d
English, ingot, f.o.b...	65 0 0-	—
,, bars ,, ...	66 0 0-	—
,, refined.....	68 0 0-	—
Australian	60 10 0-	60 15 0
Banca	63 0 0-	(nom.)
Straits	60 10 0	60 15 0
COPPER.		
Tough cake and ingot.	67 0 0-	—
Best selected	68 10 0-	—
Sheets and sheathing .	71 10 0-	—
Flat Bottoms	73 0 0-	—
Wallaroo	72 0 0-	—
Burra, or P.C.O.	70 15 0-	—
Other brands	68 0 0-	69 0 0
Chili bars, g.o.b..nom.	61 15 0-	—
PHOSPHOR BRONZE.		
Bearing metal	£112	0 0
Other alloys	£120 0 0-	140 0 0
BRASS.		
Wire	7¼d.-	7½d.
Tubes.....	7¼ -	7½
Sheets	8 -	8¾
Yel. met. sheath. & sheets.	6 -	—
Nails composition.....	8¼ -	9
TIN-PLATES.*	per box.	
Charcoal, 1st quality ...	1 0 0-	1 1 0
,, 2nd quality ...	0 19 6-	1 0 0
Coke, 1st quality	0 16 0-	—
,, 2nd quality	0 15 0-	—
Black .....per ton	16 0 0-	16 10 0
Canada, Staff. or Gla., at Liverpool	11 10 0-	12 0 0
Black Taggers, 450 of 14 × 10	30 0 0-	—

* At the works, 1s. to 1s. 6d. per box less for ordinary; 10s. per ton less for Canada; IX 6s. per box more than IC quoted above, and add 6s. for each X. Terne-plates 2s. per box below tin-plates of similar brands.

REMARKS,—The critical state into which the political affairs of Europe have drifted not only cripples commerce generally, but tends very considerably to depreciate the current value of all staple commodities, and to render the markets exceedingly sensitive and unstable. Trade nearly everywhere is reported slack, stocks are accumulating, prices declining, losses are being incurred, and time brings no relief. Metals form no exception, and are in a very unsatisfactory and unsettled condition, and the downward tendency continues its undeviating course with comparatively little resistance, and to all appearances the retrograde movement cannot as yet be considered in any way stopped. The fall has already been most disastrous to many in the trade, and holders especially must have suffered severely, and it may be questioned whether some of them will be able to hold out much longer. Margins must be maintained, or sales effected and differences adjusted. The additional calls from bankers and financiers may be difficult to comply with, but they must be met, or realisations, however ruinous, must result. Holders have in great measure brought the markets down upon themselves by retaining their stocks unduly long, and thus foolishly prolonged the agony. They must, therefore, bear the consequences. They cannot plead insufficient warning, for they have had ample and repeated warnings, the most convincing and stubborn facts, but their minds, unfortunately, have been so dreadfully clouded and biassed by self interest and false hopes that they have failed to adopt firm resolution.

The weakest no doubt will have to succumb, but we fear the awkward part of the difficulty will be when their realisations begin to take place, for the markets are gradually sinking, and the time may not be far distant when a complete void may ensue, and nothing can be done unless at an awful sacrifice; it is necessary to steer cautiously and steer safely. Too many opportunities have been allowed to escape, let not the present, bad as it is, be lost, for we are bound to look for harder times. Even Mr. Bright, the unpatriotic stigmatiser of England's policy, says that "war is probable." Trade has evidently fallen into a very deplorably low state, and it is not one class of persons only who decline to purchase, but consumers withhold their orders, merchants abstrain from making shipments. Speculators cease to operate, and investors will not buy. All, in fact, are apprehensive of still lower prices, and naturally enough all prudent men prefer to keep themselves free from liabilities and responsibilities at such a critical juncture. It may very reasonably be asked how much longer are we to be kept in suspense concerning the momentous question of peace or war? There has been plenty of time for diplomatists to have come to a decision, and it is to be hoped that the present month will not close without a final answer being given; indeed, it may be fairly anticipated, and considering the enormous strain upon the commercial community, who are really the principal sufferers by this protracted suspense, and it is only due to them that the negociations should assume a definite form, and brought to a conclusion either one way or the other. Russia must thoroughly understand that Great Britain does not intend to swerve one atom from her position, and if Russia does not intend to submit, force must be used to compel her to do so. This week our markets have been almost stagnant, and nothing even of small amount could be effected without an inducement being offered in price.

In every direction there is a diminution in business, both at home and on the Continent. The Indian trade is also interfered with by a falling exchange and higher rates of freight; and these markets are mostly over supplied, and have not yet wholly recovered from the effects of the famine, and not until the new crops are gathered in will there be much doing for any part of the East. In the absence of regular business, and during this period of political uncertainty and trial, it will undoubtedly be found more conducive to the interest of the trade at large simply to go quietly on satisfying legitimate requirements, and uninfluenced by mere reports, whether of a slightly favourable or unfavourable character, as no good can possibly be done until the Eastern Question is finally and satisfactorily disposed of by Europe; and it will be perfectly useless to attempt to establish improved rates while that question is pending. The main obstacle to improvement must first be removed, and then other matters will soon resume their ordinary position and character, and aided with renewed energy and facilities there will be every probability of a great expansion of trade and development of resources throughout the whole world.

COPPER.—It is always a bad sign to see actual stocks increasing, and this is the case with copper at the present moment, for during the past fortnight the increase amounts to nearly 1000 tons of Chili in Swansea and Liverpool, there being on the 30th ult. 19,660 tons, against 18,692 tons on April 15; and there is also an addition of 900 tons, mostly Australian in London, the present stock being 6600 tons. It is not surprising, therefore, to see the prices of the various kinds rapidly declining, and the certainty of the fulfilment of Rogers' prophecy daily becoming more apparent. Rogers rendered a great service to the trade when they published their famous circular predicting the future price of copper; it was no mere haphazard or random hit that they circulated, but the pure and wise conclusions of a sound and mature judgment. Copper every since has been on the decline, notwithstanding all the strenuous attempts to bolster it up artificially and fictitiously, and it has not reached the minimum yet, for, as Rogers' said, it ought to have been long ago at £60 for Chili bars. If sellers are curious to know why it should be at £60, we would merely refer them to the force of Rogers' argument—plain facts speak for themselves. Rogers' saw that if the price were not immediately reduced stocks would accumulate, and the market be overburdened, and if the price had then been reduced to £60, our market might have been saved in great measure from its present weakness. The mischief has been allowed to proceed without an effectual remedy being applied, and the consequence is that buyers are shyer now than ever, and would not dream of buying more than actual requirements demand; the low price is no temptation to get into stock, because buyers know that holders must be considerably poorer by the depreciation which has taken place, and may hereafter be forced to realised against their will at a considerable reduction, but it is not so much the question of the ability of holders to hold on as it is the prudence of doing so.

There are still several people in copper who have been misled by the opinion of others who have operated or who buy and sell for them, and these latter, after having given wrong advice, scarcely like to admit their error, and so leave the poor holders in doubt as to the best policy to pursue. The price is so much lower than what was given that to sell would leave a frightful loss, and it is, perhaps, almost more than many can bear, but we think upon a little reflection holders will see the utter absurdity of always taking into account the price paid. That is a point upon which most holders make a great mistake, and raise their losses. The price given has nothing whatever to do with the market, for circumstances alter cases, and what may be cheap at one time is dear at another. If a man has paid too dearly for an article, or the market changes, he cannot expect to turn it over to profitable account, or expect others to bear the loss. The condition of trade and the supply and demand will always decide its value, and therefore the point for consideration at this moment is what is the present condition of trade? Bad. Very bad. What is the supply? Excessive. What is the demand? Limited. And we would go further, and say—What are the immediate prospects? Gloomy in the extreme, and most discouraging. This is the real state of the copper market; nevertheless we shall be only too happy to hear that the depression has been overcome sooner than anticipated, and that prices are once again in the ascendant. Nothing is more distressing than to have to furnish reports time after time of an unfavourable character, and yet if publicity is to be given it must be truthful and reliable, and wholly devoid of partial or interested accounts, and although all are great sufferers by the reduced quotations and limited trade, we should be wanting in our duty were we to hesitate in rendering a faithful statement of fact.

By the mail from Valparaiso, on March 15, the market report states that the dulness reported from home quarters has not failed to impress the market. Holders have been obliged to accept lower prices, notwithstanding the decline of exchange. By the mail from Bombay of April 6 the advices mention that Australian copper tiles have declined 1 rupee per cwt., and English braziers are also in buyers' favour. By the mail from New York of April 17 we hear that manufactured copper and yellow metal are in only moderate request, at the last quotations English yellow sheathing metal is irregular, the price varrying from 15 c. to 15½ c. currency cash in bond; new sheathing copper, 26 c.; braziers and bolts, 28 c.; American yellow sheathing, 20 c.; bolts, 25 c. A few sales of ingot copper are reported at 17 c. On 'Change to-day further evidences of weakness were manifest, and g.o.b.'s were offered at £61. 1s. cash, and £62., three months. As regards manufactured and yellow metal the demand seems to have dropped off altogether. Indents for the former are limited to £62., and the latter to 6¾d. per lb. Charters for the second half of April, 1800 tons.

IRON.—Our market has not undergone any particular change since last reported. The amount of business transacted continues to be of a limited character, and the tendency of prices is downwards. With Belgian bars at £5 5s., ex ship, it is impossible to obtain any improvement upon £5 15s. for Welsh, and it becomes a question whether that price will be paid very much longer; in fact, no advance upon £5 12s. 6d. would ever have been made had it not been for a rather sudden demand springing up for small sizes. This, however, has to a great extent been met, and the works are beginning to run short again for specifications. According to Belgian prices English is 5s. to 7s 6d. per ton too dear. The Welshmen could get a great deal more employment if they would accept the equivalent of the Belgian scale of wages, and enable masters to take orders as cheaply as the Belgian houses. It is certain that no better prices than those current can be realised, and there is a probability of lower prices. Setting aside every other reason the rise in freight is sufficient to limit shipments. There appears to be a scarcity in sailing vessels just now, and in the event of war freights will undoubtedly be higher, and war risks incurred. The iron trade will, therefore, suffer, and prices must decline. Swede bars are easier at £9 7s. 6d. to £9 10s. for Indian assortments.

The amount of business transacted has been of a very limited character since the holidays, which have been of long duration at many of the works on account of the great depression which exists in this particular branch of trade. There appears to be no returns from any district which show any improvement, but, on the contrary, all appear to be unanimous in their complaints, not for any special kind of iron, but for all descriptions. However, now that the vacation is over at most if not all the works, let us look forward to better times than the first four months of this year and the whole of last year have proved themselves to be, and let us trust that a better understanding may be brought about between employers and employed than has existed of late, so that masters may be enabled more often to meet buyers in their limits. Low prices are often as unprofitable to the buyer as to the seller, and especially to commission merchants, for now that iron is not half the value it has been their profit corresponds, and iron goes just as far now as it did in the most prosperous of times. The complicated state in which politics remain is, perhaps, the chief cause of the great depression, and it is this which makes buyers so careful in giving out their orders, so fearful are they of making losses.

We hear from Sheffield that a few of the works are wholly employed in the manufacturing of rails, and are working full time, but we regret to note that the majority refuse to accept orders at the present rates, and are consequently partially, if not entirely, out of employment, and although efforts are constantly being put forward to push business, still it appears to be done with but little success. No improvement is reported from Leeds; the mills continue only to work four days out of the seven, as they have done for many months past, a marked scarcity of orders being observable for every description, except perhaps for the best Yorkshire iron, for which there appears to be a fair request, with a moderate amount of business being transacted at prices as last quoted. Masters seem to be showing some anxiety as to their future welfare, which now looks so dull and gloomy; but they appear to be very undecided how to act, whether to lower prices or not. Nothing of much importance is reported from the Rotherham district; the amount of business which has been transacted seems to be of a very limited character. It is said that the men employed at the Elsecar Works are out on strike, refusing to work on the continual reductions being made in their wages. It now more than a month since the men have left off their work, and during that time they are said to have been supported chiefly by the subscriptions from the district; but there is no difficulty in getting labour from other districts, and the hands will not be taken on again on account of the bad iron they turned out. At the Clough Works, Masborough, there are similar disputes respecting the wages question, neither masters or men appearing to be able to come to satisfactory terms. There are, however, said to be a few works in the district which are moderately employed, and the great depression which is so conspicuous at most of their neighbouring works is consequently not so much observed at these. There is not much to note in the returns from South Durham and its district, very little business having been transacted, and prices remaining without change, with the exception of grey forge iron, which is said to be procurable at 9d. to 1s. per ton less. Pig-iron No. 3 has been quoted at 39s. 6d. per ton, at which price a limited amount of business has been transacted.

Manufactured remains dull, without alteration in prices. Stocks continue high, but it is thought they have decreased during the past month. Business in hematite brands of pig-iron at Barrow in-Furness is reported inactive, and quotations have been without change, sellers holding out firmly, and rarely giving way to buyers in their limits. Some of the works, however, are better employed than they have been of late. Iron ore is said to be in fair request, with prices without variation. The shipping trade is rather healthier. The American market is reported by the mail of April 17 as being quiet, and prices unchanged, at $18 to $19 for No. 1 X, $17 to $18 for No. 2 X, and forge $16 to $17. A Small business done in Scotch, at $25 for Coltness, $24·50 for Glengarnock, and $24 for Eglinton. Scrap being quiet is quoted at for No. 1 wrought $21 to $22, from yard. A fair business done in rails, chiefly at $32 to $37, and in old $19 to $19·50. There is said to have been done a good business in Scotch pig-iron at Glasgow, chiefly at 50s. 2½d. for prompt cash. The warrant market continued to droop all last week, the lowest price being 50s., but at the end of the week 50s. 1½d was realised for prompt cash. Makers' iron shows no change either in price or demand. The market showed very little fluctuation all last month. The stock in store shows an increase of 3030 tons, and now amounts to 173,497 tons, with warrants in circulation for 154,700 tons. The weakness in the Middlesborough market that was so conspicuous at the end of March has continued, and No, 3 f.o.b. Tees is quoted at 39s. 6d. per ton; but business has been done under this price. The stock in Connal and Co.'s yards there is 65,015 tons, being an increase of 6015 tons, with warrants in circulation for 64,300 tons. The market now closes for Scotch pig-iron at 49s. 9d., mixed numbers, cash, and we hear that there is a good deal offering, and prices are likely to be lower before long.

SHIPMENTS.

For the week ending April 28, 1877	Tons	13,390
For the week ending April 27, 1878		8,382
Decrease		5,008
Total decrease for 1878		12,465
Imports of Middlesborough pig-iron into Grangemouth:—		
For the week ending April 27, 1878	Tons	6,426
For the week ending April 28, 1877		4,123
Increase		2303
Total increase for 1878		3,650

FURNACES.

In blast April 28, 1877	113
In blast April 27, 1878	92

SPELTER.—Dull, and easier rates for both Silesian and English hard. The prices in the Indian markets have declined, and the increased rates of freight prevent further shipments. The stock of Silesian at this port on the 1st inst. amounted to 184 tons; Grimsby, 315 tons; Hull, 1333 tons: total, 1832 tons.

STEEL.—No change for the better. Steel rails are reported as low as £5. 10s. per ton.

LEAD.—There is no sign of any improvement at present in this metal, and sellers of good soft English freely accept £17. Manufactured has also declined. Sheets are procurable at £18; pipe, £18. 10s., or 30s. extra if tinned inside. Patent shot is reduced to £22. 10s., and red lead to £19. 15s.; dry white to £24. 10s., and ground in oil (genuine), £26. 10s.

TIN-PLATES.—In little better request, but orders are limited at very low prices, which makers cannot very well accept.

TIN.—When English tin was over £100. per ton the smelters resolved to alter the commission to brokers from 1 per cent. to £1. per ton, and these have been the terms for some time past. Now that tin is under £100. per ton the smelters cancel their previous act of injustice by making the commission 1 per cent. instead of £1. per ton. How very convenient is this sort of arrangement to themselves, always to be making alterations and modifications in their own favour to the prejudice of others. The tin smelters are becoming completely Russianised, but does it not appear that there is a great want of honour and principle in such alterations? A man's uprightness is generally proved by the manner in which he carries out a bargain when it goes against him, and we entertained a higher opinion of the English smelters than to think that they would repudiate their own special arrangements which they are morally bound to fulfil, and certainly ought to be held to. The alteration in the first instance from 1 per cent. was an arbitrary act, and it could not be justified under any circumstances, there was no excuse then that trade was bad and prices so low that they could not afford to pay 1 per cent. No, quite the contrary, the English tin trade was in a most flourishing condition, and yet the English smelters had not the generosity to wish others to participate in its prosperity, but actually deprived commission houses of their established rights. If they had advanced the commission as they might very well have done instead of reducing it, it would have been an honourable and commendable act on their part, and according to the measure of their liberality they would now deserve consideration. All would have willingly and readily joined in acquiesing in a fresh arrangement, but sellers estrange their best supporters in dealing thus unfairly. There was no occasion ever to have altered the commission, innovations in trade terms are invariably troublesome and often injudicious. The copper smelters honourably paid a full commission when copper was £40. per ton, and as honourably pay it now that it is only half that price, their excellent example might be followed with advantage by the English tin smelters. Perhaps some of the tin smelters, if not all, will reconsider the decision they have just announced, for we feel sure their consent must have been obtained without due consideration being given to the matter, or under some sudden pressure. There is one at least amongst the number who surely would not sacrifice honour and justice for interest. We strongly recommend the withdrawal of the obnoxious resolution purely upon the grounds of justice and honourable dealing.

The tin market for both English and foreign has declined this week, chiefly owing to the continued increase in stocks, there being according to the last return 9231 tons, against 8848 tons, or about 400 tons increase. From New York on the 17th ultimo the market was said to be rather easier, and dull consequent upon lower prices at the primary markets, as well as in London. From Rotterdam on the 30th instant it is reported that a dull tone prevails. Banca sold at 39¾ fl. to 39½ fl.; Billiton, 37¾ fl., sellers.

THE IRON TRADE.—(Griffiths's Weekly Report).—Friday evening. The Glasgow market has further declined this week, warrants closing this evening at 49s. 10d., a fall since last Friday of 4d. per ton. Makers' iron is also lower. We quote makers' No. 1 iron—Gartsherrie, 58s.; Coltness, 62s.; Calder, 58s.; Langloan, 59s.; Summerlee, 57s.; Monkland, 51s, f.o.b. Glasgow; Glengarnock, 57s.; Eglinton, 51s. 6d., f.o.b. Ardrossan; Shotts, 59s., 6d. f.o.b. Leith; Kennel, 54s. 6d., f.o.b. Bo'ness. There has been more business doing on our Exchange this week in sheet-iron and nail-rods. The advance in freights is beginning to interfere with the trade in foreign indents, and has kept back several orders for these markets this week. We hope a favourable turn in politics will reduce insurance premiums, which will bring the rates down. Orders for boiler-plates continue scarce, and the trade in this department is inactive. There has been more doing this week in marked Staffordshire bars, and the demand for small rounds and squares of second-class quality is, perhaps, a little more active. The trade continues tolerably active for galvanised sheets. Gospel Oak, John Lysaght, and Roses are the brands most in demand. Metals are weak all round. Tin is considerably lower this week. Straits and Australian are now £61. We said six months since that Australian tin would come down to £60. Spelter is about 10s. lower; price now £18. for Silesian. Copper, weak, unchanged in price. Lead 5s. to 10s. lower.

MESSRS. VIVIAN, YOUNGER, and BOND—COPPER: Early in the month importers met the market freely, and a large quantity of Chili bars were disposed of at £62. to £63., according to brand. This relieved the market to some extent, and stiffened prices about £1. per ton. The improvement, however, was not maintained, and prices again drooped to £62. for g.o.b.'s, and at the close there are sellers at this quotation, with business reported in Urmeneta brands.——TIN: The course of this article continues most discouraging. Stocks increase month by month. The consumption is large, but at present the monthly advices of shipments from the Straits and Australia continually exceed the monthly deliveries from warehouses here by several hundred tons. America had a large supply from the Straits last year, and as this is not now being kept up on the same scale, a larger surplus becomes available for this market. Foreign has been sold from 63s. down to 61s., and at the close sales have been made at 60s. 6d, and even at 60s. for small lots, with an unsettled market.

No marked change or improvement has taken place in the MINING SHARE MARKET this week, and very little business has been transacted either in investment or speculation. Our quotations, therefore, are for the most part nominal. The mines dealt in to a small extent have been Van, East Van, D'Eresby Mountain, D'Eresby Consols, Rookhope, South Condurrow, Glenroy, Parys Mountain, Tankerville, Leadhills, and a few others. The strike, or rather lock-out, of miners at Devon Great Consols Mine has directed attention of late not only to the affairs of that mine, but to the so-called five-weeks system, which seems to be but imperfectly understood by shareholders at large; and also to the absolute necessity, if mines are to be carried on at all, with the present low price of metals, of every economy being observed in working expenses; in the reduction of agencies where possible, and the stoppage of all works which do not pay and are not required for discoveries. Devon Great Consols at the present moment, we understand, employs about 700 people, and returns some 800 tons of copper ore monthly, at a loss of 1000£., or 12,000£. a year. The directors and principal shareholders say they would rather stop the mine altogether than have to put their hands in their pockets and provide this loss of 1000£. per month. In this case 700 people would be thrown out of employment, and nearly 40,000£. a-year (which the mine costs to keep going) would be lost to the district. The directors say, however, that they are willing to go on if the agents and men will meet them in a fair reduction of expenses, and revert to the old system of 12 pays in a year. Upon this men strike. And now let us ask in what way the working miners are really injured? Up to January, 1872, the custom in Cornwall from time immemorial had been to have 12 sales of produce and 12 "pays" in a year. A meeting was then held in Cornwall, chiefly of agents and merchants, and it was determined partly to abolish the old system, by adhering to the 12 monthly sales of produce a-year, but to have 13 monthly pay days. At that time mining was very successful and profitable; tin ore was at 85£. per ton, as against 35£. now. Copper stood at 100£., as against 65£. at present, and so much was not thought of the new mode of paying wages and costs which then, as now, chiefly affected the agents. The greater part of the ore raised in a mine is worked on tribute—that is, the men receive so much in £1. on all the ore they break; this is their "pay," and it can make no material difference to them whether it is divided into 12 or 13 payments. Again, when a man works by the day he is paid for every day he works, whether the payment is made 12 or 13 times a year. To agents, however, it makes a vast difference, and it is in reality an agents' question. Many of them at the time the change was made were getting 20£. to 40£. per month each; 12 months to the year; the new plan gave them 13 months' pay in a year at the same rate per month. It did not, that we consider, give in reality any advance to the men, nor would a return to the old system affect them in the way they seem to think. To agents and monthly men it would, of course, mean 12 months' pay in the year instead of 13.

TIN MINES remain flat, and there is scarcely any business doing in them. The smelters on Wednesday reduced the standard for ore £1. per ton, which has again added to the existing depression. Carn Brea are quoted 40 to 42½; Dolcoath, 29 to 31; Penstruthal, 4s. to 6s.; South Condurrow, 11 to 11½; South Frances, 1¾ to 2; Tincroft, 10 to 12; West Frances, 2½ to 3; West Godolphin, 1¼ to 1½; Wheal Agar, 3¾ to 4¼; Wheal Grenville, 3½ to 4. At the North Levant meeting the accounts for four months showed a loss of 959£., and a debit balance of 1075£. A call of 10s. per share was made. The tin sold—33 tons—realised 1191£. The works are to be curtailed until the price of tin improves. Wheal Peevor, 6 to 6¼.

Copper Mines are without change. At the Cornish Ticketing on Thursday the standard for ore declined £1. The average price of the ore sold, 7¾ produce, was £8. 14s. per ton. Devon Great Consols are quoted 2½ to 3; West Tolgus, 60 to 62½; the ore sold on Thursday, 300 tons, realised 1781£. Mellanear, 3¾ to 4¼; this mine, which stood at the head of the Ticketing, sold 540 tons, for 1697£. West Seton, 10 to 12; the sale here, 204 tons, realised 782£. Parys Mountain, 8s. to 10s.; the pitches, which do not pay at the present price of copper ore, are to be stopped for the present, and the costs reduced as much as possible until metals improve. South Caradon, 70 to 75; Bedford United, 4s. to 6s.

LEAD MINES have been quiet, and not much business doing, the price of lead seeming to militate against it. Van shares are 19 to 20; the month's sale of lead (400 tons) sold this week for 4515£., the highest price being 11£. 15s. 6d. per ton, the lowest (for 200 tons) 11£. 1s. 6d. The blende (150 tons) sold at 3£. 1s. per ton, realising 457£. 10s. The average price of the lead here during the year 1877, when the mine sold upwards of 500 tons per month, was 13£. 15s. per ton. East Van shares are 5½ to 5¾; the ends at the 55 are producing good stones of ore—not good enough to value but are being saved for dressing. Roman Gravels are weaker (7¾ to 8, ex div.); the next month's sampling will be 180 tons. Ladywell, ¾ to 1. Tankerville, 4 to 4½; Watson's shaft is 11½ fathoms below the 192. The 192 end west is worth 1¼ ton per fathom. The 192 east is split into branches; worth 10 to 12 cwts. per fathom. The winze below the 192 east is worth 2 tons per fathom. D'Eresby Mountain, 80 to 100; D'Eresby Consols, 11 to 13; Leadhills, 3⅝ to 4⅛; Llanrwst, 1¾ to 2¼; Court Grange, 1 to 1¼.

Pandora, 15s. to 20s.; the sale of lead, 35 tons, realised 10£. 8s. 6d. per ton, or 364£. 17s. 6d., and 35 tons of blende will be sampled next week. Rookhope, 17s. 6d. to 20s.; the sale here, 40 tons of lead, realised 401£., or 10£. 0s. 6d. per ton. Pateley Bridge, 2¼ to 2¾. West Pateley Bridge, 2 to 2½; the winze is down 5 fms. below the 56, and the lode is increasing in size and value as it gets deeper; at present 4 ft. wide, between two well-defined walls, and good branches of lead in the north wall. Glenroy, 15s. to 17s. 6d.; Glyn, 13s. to 15s.; Grogwinion, 3¼ to 3¾; Great Laxey, 18 to 19; Herodsfoot, 7 to 8; Temple, 3¾ to 4¼; West Chiverton, 11 to 12; Wye Valley, 1½ to 2; West Wye Valley, 2¾ to 3¼. South Darren, 38s. to 42s.; the 100 west is worth 10£. per fathom. The winze below the 90 is worth 47£. per fathom. No. 1 stope in the 90 is worth 25£. per fathom. No. 2 stope is worth 28£. per fathom. The 80 end is worth 12£. per fathom. The stopes in the 80 are worth 25£. and 10£. per fathom. On Monday the sampling will be 40 tons, valued at about 600£. West Tankerville, 15s. to 17s. 6d.; the next sampling is expected to be 40 tons.

FOREIGN MINES.—Blue Tent, 3 to 3¼; Hultafall, 5 to 5½; Chontales, 7s. 6d. to 12s. 6d.; Eberhardt, 5¾ to 6¼; Flagstaff, 10s. to 12s.; Frontino, 1¾ to 2¼; New Zealand Kapanga, ⅜ to ½; New Quebrada,

1⅞ to 1⅞; Panulcillo, 15s. to 17s. 6l.; Port Philip, ½ to ⅝; Richmond, 9½ to 10; Santa Barbara, 25s. to 30s.

The Market for Mine Shares on the Stock Exchange has shown the same absence of business as has been observable for some weeks past, and the difficulty both of obtaining capital for new adventures and for disposing of securities at current quotations appears to have increased rather than otherwise, but there is still the feeling that some way out of the political complications will be found, and that an immediate and important general improvement will be the result. The affairs at Devon Great Consols remain unaltered. It was stated last week that the strike was rather advantageous than otherwise to the shareholders. The further decline of 1l. in the copper standard, on Thursday, certainly does not encourage a more favourable view so far as the miners are concerned.

In connection with the return to the calendar month system at Devon Great Consols a curious phase has occurred—the local parsons, both clergymen and dissenters, have "protested" against the company varying the mode of paying the company's servants—a piece of impudence which would scarcely be equalled were mining capitalists to "protest" against the occupants of pulpits preaching the erroneous theological doctrines they are accustomed to offer to their hearers. They may be excused, however, as being probably as little acquainted with all the important facts of the Devon Great Consols case as with the distinctive doctrines of their competitors in the religious profession. The copper ore sold in March from the Devon Great Consols was 856 tons, realising 1806l. 2s. 6d. To obtain this, in addition to some arsenic, &c., of no very great tonnage, they employed, taking the last cost-sheet, 11 mine agents, receiving 94l. 10s. as salaries for four weeks; three dressing agents, receiving 16l. 12s. per four weeks; and three reduction agents, receiving about 15l. for four weeks. These may be called the chief agents, and as they take 126l. per four weeks, or nearly 10 per cent. of the entire copper returns, it would be lamentable enough; but as a matter of fact they have a still larger number of deputies to assist them; and the enormous sum paid for "agency" is practically limited to a comparatively few families, a system of corruption having gradually developed itself during a long series of years in proportion as it became necessary to create berths for sons, brothers, nephews, and so on. It is beyond question that the agency charges are draining the life's blood from Devon Great Consols, and the opposition to the return to the calendar-month system is to a great extent due to a desire to divert attention from the sweeping changes which are inevitable. Again, the parsons are at fault in regarding the change as other than "an agents' question." The change does not affect any working man properly so called—the property in the mine being paid at so much per day, at so much per fathom, or by some other form of piecework, and being, therefore, unaffected by the change. When the four-weeks system was introduced it emanated entirely from the agents, and was indirectly promoted for electioneering purposes, hence the support the movement received from certain gentlemen of position. As the advocates of the four-weeks system desire the matter to be ventilated, full details, with reference to chapters and texts, shall be published next week.

St. John del Rey, 335 to 315; the telegram received from Morro Velho to-day dated Rio de Janeiro, April 29 (line interrupted), states that the produce for the second division (11 days) of April was 12,750 oits., of the value of 4940l., the ley of the ore being 5 6 oits. per ton, or 7 oits. according to the old measurement. A previous telegram (also delayed) gave the profit for March at 8400l. Don Pedro North del Rey, ½ to ⅝; the produce for the first division of April was 1450 oits.

Richmond, 9½ to 10; the usual weekly telegram from the mine at Eureka states that the week's run was $80,000, from 1030 tons of ore. The week's produce of the refinery was $60,000. The directors announce a dividend of 7s. 6d. per share, and it is stated that the developments in the mine continue to be most satisfactory, and that since the starting of the furnaces the company has paid 40,500l. in dividends and 12,800l. as interest on debentures. Although the reserves of ore have been so largely drawn upon since the starting of the furnaces in September last, the quantity in sight is as great as ever. Explorations have been carried on energetically, as shown by the weekly letters of the manager, and between the 200 and 400 ft. levels large bodies of high grade ore have been opened out. The report of the committee of investigation is in the printer's hands, and will be issued as soon as possible.

Flagstaff, ½ to ¾; the Committee of Investigation appointed at the meeting of March 2 have issued their report embodying an appeal which, "if unheeded, it will be impossible to protect the shareholders interest, as the property must then, ere long, pass irrecoverably from their hands, a result which may be avoided by a prompt response to the proposal now made. A considerable part of the amount required has already been promised." They bear testimony to the business-like zeal with which the board, lately strengthened by the addition of Messrs. Bacon and Harness, has endeavoured to extricate the company from its difficulties. The property which cost the shareholders 300,000l., has passed out of the hands of the company for 37,0l., but it seems that upon repayment of this immediately the property can be recovered. The shareholders have not responded to the appeal of March 2. It is now proposed as a last resource to borrow 6000l. at 25 per cent. per annum interest upon the security of the prior judgments and claims (which rank before the debenture mortgage), and they offer as collateral security 12,000l. worth of debentures. Both the committee and the directors urge the shareholders to subscribe the amount within 10 days or it will be useless, and the directors as a postscript to their circular say that on account of some erroneous impressions respecting the position of the company in Utah, the directors take this opportunity of stating that the mine is now and has during the past year been worked for the company, and at a good profit which, though not available to the board (in consequence of the lessee not having fulfilled his contract), yet the profits, the board is informed, are being applied for the reduction of the company's indebtedness in America, or such claims as the lessee has assumed. From a letter received from the manager, dated April 1, referring to the improvement and development of the mine, the directors are advised that—The new boilers are now up at the works and nearly ready to run. The power is also increased, and the pumping machinery has been improved with the intention of sinking the shaft and running No. 8 level. Ore will be shipped again in three or four days. The improvements made in the machinery will be suffioient for draining the mine in the wet dart of the year when the snow is melting. The small "discharge pipe" in the pump has been replaced by a large one, and another pump has been added. The mine is looking well, with a large quantity of good ore in sight, and promising indications of new ore bodies. A subsequent letter states that "the machinery is now in good condition, and in the last few days ore shipments resumed."

With regard to Utah mines, Mr. W. Bredemeyer, of Salt Lake City (April 9), writes that the distance of the Bay City Tunnel up to the rise connecting it with the Emma is 1700 ft., the rise being about 200 ft. high. They are extracting and shipping ore of very good quality and in paying quantity, both from the old and new works of the Emma. It is a pity that they wasted their money in litigation, when that money could and would have made the Emma a paying mine. The Flagstaff is extracting large quantities of ore from new ore bodies. Let them leave the mine in the hands of Billings and Co. much longer, and they will have by and-by a second Emma affair. Is it not strange that everyone associated with the Flagstaff makes plenty of money except the English shareholders? These shareholders always talk, and act either not at all or not enough for the circumstances. The Chicago Company has a very nice ore-body in the Queen of the Hills, and would, by using some common-sense and a little money, open another paying ore body in the Chicago. If these companies would only look and follow the example of the Ontario, Prince of Wales, and Reed and Benson Mines, then they would observe and learn what perseverance and common sense, by expenditure of less money than they so generously have expended on their mines, can do. There is not a mine, owned by English companies here in Utah but the same can be made a paying one by good management. I trust that this year will be the commencement of a new era of English mining enterprise in Utah.

The "Bonanza" Mines during March yielded—Gold, $1,620,000; silver, $1,769,333. The total for the first quarter of the current financial year was—Gold, $4,778,382; silver, $5,272,004. The bullion from the California Mine for the quarter has run very nearly half and half, while that from the Consolidated Virginia has carried 45½ per cent. gold and 54½ per cent. silver. During the corresponding quarter last year these mines produced only $6,357,300, of which the California yielded $4,999,800, and the Consolidated Virginia $1,364,500. The latest advices from Mineral Hill state that the usual progress has been made in driving during the past week; the ground has been the same—without change. I have suspended the cross-cut west of this, as nothing was seen after driving 10 ft., and all traces of the spar had disappeared. The tunnel on the western slope can be made to command this portion of the ground with fair prospects of success, as nearly all the ore ground have made to the croppings from the level of the Queen Tunnel, or from the croppings downward.—Star Mine: Here the men are breaking ore every day; we have taken away nearly all the ore in the neighbourhood of the cave, and are prospecting now on a little branch that shows itself behind the Star incline; it looks promising, is in new ground, and commences at the level of the Queen Chamber. The winze in the Troy Mine is going down pretty fast. We have cut ahead, which has somewhat disarranged the seam on which we are sinking; we have at present no signs of minerals, although the lime looks very favourable. On the western slope we are busily employed, but we have not got our tunnel far enough into the hill to be on the line of the ore channel.

Referring to Arizona mines, Mr. Henry Sewell writes that, according to the report of Mr. R. M. Phillips, the Silver King Mine is limitless, at a depth of 250 ft., the vein being about 100 ft. in width, and the ore averaging all the way from $200 to $20,000 to the ton. On the surface some 6000 tons of $220 ore awaits the action of a working process, which will net the proprietors $1,300,000, which is quite a nice little sum, considering the cheapness with which it can be worked, as we are informed that the hauling and milling only costs $4·50 per ton. With their present 10 stamps they are shipping $80,000 monthly. Up to April 18 the Consolidated Virginia has paid 44 dividends, in the aggregate $39,930,000, or $74 per share of stock. The California has paid 24 dividends, in the aggregate $25,920,000, or $48 per share. The total amount of dividends for the two mines is $65,880,000. Colorado United, 2¼ to 2½; the company has issued its circular. The striking of the Terrible lode by the Union Tunnel has been followed by the completion of the junction of the Silver Ore shaft and seventh level with the tunnel, where the superintendent says there are 7 in. of silver mineral rich in grey copper, streaked with bright and ruby silver. The March sales of ore amount to $18,797 97.

The Market for Hydraulic or Gold Washing Shares remains steady, and prices are unchanged. Satisfactory accounts are being received from the different mines. Blue Tent, 3 to 3½; steady washing is being carried on, and the canal is carrying a fine stream of water, with every prospect of a continuance. Birdseye Creek, ¼ to ½; the agent reports the Waloupa claim is turning out rich, and states the prospect for profits to the end of the season is good. Cedar Creek, 6s. to 6s. 6d.; the agent reports that the results this year have hitherto been satisfactory, and the appearances are encouraging. The returns have shown a marked increase, and the company seems to be fast paying off its indebtedness, and with the present prospects of a good season it is considered likely to come again into a favourable position. Fall Creek Lakes Water Company's statutory meeting was held on Tuesday, and a full report will be found in another column. Some interest attaches to this company, as it is the first one established here for the simple purpose of supplying water to hydraulic mines. There can, it is thought, be no doubt as to its future, for similar companies in California are amongst the most successful of corporations there.

Lead Mines have been somewhat firmer, with more transactions recorded. Van, 19 to 20; the usual monthly report states that the mine continues to look well. The sale on Thursday—400 tons lead and 150 tons blende—realised 4972l. 10s. Grogwinion, 3½ to 4; the deep adit level east has improved, and looks promising for working at a lower depth, the ground in No. 3 lode having now been proved productive for upwards of 12 fathoms beneath this point, and it is expected that when No. 4 lode is sunk on it it will be found equally rich. All other parts of the mine are looking as well as usual, and 150 tons of lead have been sampled for sale next week. Wye Valley, 1¾ to 2¼; the lode in the winze sinking below the 22 east is of a very satisfactory character, and yields well, and is of the most promising nature for great discoveries at the next level. The end of the 22 east contains a fine lode, which is steadily improving, and all other points in the mine look well. West Wye Valley, 2½ to 3½; the 52 fathom (or bottom) level is opening out well both east and west of shaft, and it is fully expected that quite as good reserves of ore ground will be met with here as in any of the upper levels. All other operations are going on satisfactorily. Caron, 2¼ to 2¾; all going on well here, the lode still improving in value, and surface operations being pushed rapidly forward. Saint Harmon, 2½ to 3½; rapid progress has lately been made at this mine, and at various principal points of operation exhibit a great improvement, so much so that it is expected that some valuable discoveries will soon be met with, particularly in the cross-cut towards the south lode, where the ground has lately improved in character. The mine has now entered the market as a seller of ore, 20 tons having this week been disposed of at a good price, considering the state of the metal market, and the shareholders are to be congratulated upon what is, it is believed, the commencement of a long period of prosperity. Red Rock, 2 to 2½; the development of the recent discoveries shows that there is a large deposit of ore available which can be brought away at a fair profit. All operations are being carried on well. South Cwmystwith, 3 to 4; this mine continues to open out well.

Pateley Bridge, 2¾ to 2¾; the 30 east on Rake vein has very much improved within the last few days, being now about 6 ft. wide, and worth at least 4 tons of lead ore per fathom. This end is now entering into a long run of virgin ground over 1 mile in length, and is a most important improvement for the mine. West Pateley Bridge, 2 to 2½; No. 2 shaft on the north Rake vein is down 32 fms., and driving will be commenced east and west under the run of ore ground gone down in the upper level. The Craven Cross vein, in the winze sinking below the 56, is described by the manager as "a splendid vein, increasing in value and size as we get deeper: at present 4 ft. wide, between two well defined walls, and carrying good branches of galena on the north wall." No alteration to report. Assheton, 1 to 1¼; West Assheton, ¾ to 1.

Subjoined are the closing quotations:—

Assheton, ¾ to 1; Carn Brea, 41 to 43; Devon Great Consols, 2½ to 3; Dolcoath, 29 to 31; East Caradon, ⅛ to ¼; East Van, 5⅜ to 5⅝; Glenroy, ¾ to 1; Glyn, ⅛ to ¼; Great Laxey, 18½ to 19½; Leadhills, 3¼ to 4; Marke Valley, ⅛ to ⅜; Pary's Mountain, 8s. to 10s.; Pateley Bridge, 2½ to 2¾; Penstruthal, ⅛ to ¼; Roman Gravels, 7¾ to 8¼; Rookhope, ¾ to 1; Tankerville, 3⅞ to 4⅛; Tincroft, 10 to 12; ; Tyn-y-fron, 1⅜ to 1⅝; Van, 19 to 20; West Assheton, ⅝ to ⅞; West Chiverton, 11 to 12; West Pateley, 2 to 2½; West Tankerville, ¾ to 5½; Wheal Grenville, 3½ to 4; Almada and Tirito, 6-16ths to 7-16ths; Argentine, ⅛ to ⅜; Birdseye Creek, ⅛ to 1⅛; Blue Tent, 3 to 3¼; Cape Copper, 29 to 30; Cedar Creek, ⅛ to ⅜; Colorado Terrible, 2½ to 3; Chontales, 9s. to 11s.; Don Pedro, ½ to ¾; Eberhardt and Aurora, 5¾ to 6¼; Exchequer, 2s. to 4s.; Flagstaff, ½ to ¾; Frontino and Bolivia, 1¾ to 2; Hultafall, 5 to 5½; I.X.L., ⅛ to ¼; Javali, 4s. to 6s.; Kapanga, ¼ to ⅜; Last Chance, ⅜ to ⅝; New Pacific, ⅛ to ⅜; New Quebrada, 1½ to 1¾; Oregon Preference, 4 to 4¼; Pestarena, 4s. to 6s.; Plumas Eureka, 2¾ to 3; Port Phillip, 7-16ths to 9-16ths; Richmond Consolidated, 9⅜ to 9⅝; St. John del Rey, 305 to 315; Sierra Buttes, 1½ to 2; South Aurora, ⅛ to ¼; Tecoma, ⅛ to ¼; United Mexican, 1⅛ to 2.

COLLIERIES.—Little or no change has taken place in these shares except a slight rise in Chapel House, which are a good deal enquired for, while there are few on the market. Reports from all the coal and iron markets are, on the whole, decidedly more favourable than they have been for some time past. Shipments continue to show an increase which, as the shipping season advances, will no doubt become more marked. The Baltic navigation being now open large quantities of coal and iron are making their way thither. Rumours of a Government prohibition of the export of steam coal have been floating about, but little importance is attached to them. South Wales is, as usual, to the fore in shipments of coal and iron, and although prices are still low business generally in this district has decidedly improved, and a very hopeful feeling is entertained for the future

The extraordinary general meeting of John Bagnall and Sons (Limited), held on Tuesday at Birmingham, was adjourned to the 21st inst. for the purpose of enabling a committee of shareholders to discuss with the directors the details of a scheme for the reorganisation of the company. The plan proposed was to reduce the nominal capital from 300,000l. to 192,000l. by the cancelling of 7l. per share as capital unrepresented by available assets, and to create 48,000 new shares of 3l. each. It appears that the debenture debt is 60,000l., and the liability to other creditors amounts to 25,000l.

The output at Chapel House is steadily increasing, and when the new engine, now in process of erection, is complete, which will be in a month's time, the raisings of coal will be doubled. A large profit is still being obtained on all the coal raised, and the manager anticipates no difficulty whatever in disposing of an output of 1000 tons per day, which can be raised shortly. The development works at Alltami are proceeding steadily and satisfactorily, and coal is being raised at a cheaper rate, while further economy will be secured during the present month by increasing the size of the pit tubs, so that they may be sent along the tramrails direct from the cage. The shares are quoted 3½ to 4.

The Ynisedwyn Company's shares have been well taken up by parties in the neighbourhood of the collieries and ironworks secured by the company. The coal and iron can be turned out at so low a cost as to leave a very good margin for profit; and, in fact, the company's agent in Swansea has his books full of orders at remunerative prices. We recently gave full particulars of this company, because it is one which promises to be an unusually prosperous one, and there seems every probability that returns will be obtained from it immediately. Llay Hall shares close at 6 to 8. Chapel House, 3¼ to 3¼. Mold Argoed, ½ to 1½. Cardiff and Swansea, ½ to 1. New Shariston, 3¼ to 4¼. Newport Abercarn, 4 to 4¼. Thorp's Gawber Hall, 2¼ to 2¾.—[*Erratum*: In the article on Collieries last week the average rate of profit at the Chapel House Colliery was printed at "2s. 8½d.," whereas it should have been "2s. 1½d."]

Petitions have been presented to the High Court of Justice for the winding-up of the Patent Steam Engine Company, the Home Investment Society, the General Meat Supply Association, and the Northern Bohemian Collieries Companies, which is to be heard on May 4.

Vice-Chancellor Malins has appointed Mr. F. B. Smart (Smart, Snell, and Co, accountants) the provisional official liquidator of the Home Investment Society.

The Scottish Imperial Insurance Company report for the year ended Dec. 31 shows that the net revenue from premiums was 92,759l., and the losses paid were 57,327l. in the fire department. In the life department 375 new policies were issued, assuring 206,600l. with a new premium income of 6831l. The profit for the year was 8922l., and a dividend of 6 per cent. is recommended, the balance to the reserve being now 29,121l.

*** With this week's Journal a SUPPLEMENTAL SHEET is given, which contains—Original Correspondence: New Method to Prevent Overwinding (A. Stevenson); Prevention of Overwinding; the London Coal Supply; Canadian Mining Notes—No. II.; Canadian Phosphates (W. Gray); Chontales Mining Company (W. B. Palmer); New Mexico—No. I. (F. M. F. Cazin); an Examination into the Position and Prospects of Certain Mines—No. IV.—Eberhardt (W. Gabbott); the Flagstaff Silver Mining Company of Utah (A. A. de Metz); New Quebrada Mines (B. Symons); the New Quebrada Company (W. W. Bird, R. Lorimer, J. H. Ritchie); the Present Tin Standard (C. Bawden); Tin in Tasmania (W. Tregay); Don Pedro Gold Mine; Don Pedro North del Rey (Gold) Company (J. S. Houston); Rock Drills (J. G. Cranston, Loam and Son); the Condition and Prospects of Mining; Kit Hill Tunnel; West Cwmystwith—Mismanagement; Devon Great Consols—the Five Weeks Month (D. P. Alford); Thirteen Months in the Year; the Five-Weeks Month at Liskeard; Lead Mines in the North—West Pateley Lead Mines; Kingston Consols Mine (E. A. Saunders); West Seton—Divided Management *v. Mining by Rule*; Reminiscences—No. II.; Registration of New Companies—Meetings of Santa Barbara, Fall Creek Lakes Water, New Zealand Kapanga, South Tolcarne, and the Hamstead Colliery Companies, &c.

BROWNGELLY MINE (St. Neot, Cornwall).—A company has been formed on the Cost-book System in 256 shares to work this property, situate near the famous Phœnix Mines. The district is celebrated for the production of shallow deposits of copper. One of the lodes at Browngelly shows a splendid gossan back with rich copper ore. The present price of shares is 2l. each. Mr. Alfred E. Cooke has undertaken the London management.

WEST PATELEY BRIDGE.—The No. 2 shaft having been sunk 32 fms., driving is about to be commenced east and west under the rich run of ore ground gone down in the sole of the 20. The stopes continue of the same value. The levels are full of leadstuff; the engine will resume drawing on Monday. These works are on the North Rake Vein, in the Golden Fleece section of the property. In the Craven Cross section the north shaft has reached the lime rock, so that little timber is required. The winze sinking below the 56 is down 5 fms.; the manager says:—"We have a splendid vein here, increasing in size and value as we get deeper; at present 4 ft. wide, between two well-defined walls, and carrying good branches of galena on the north wall." Surface operations are being vigorously proceeded with.

Notices to Correspondents.

*** Much inconvenience having arisen in consequence of several of the Numbers during the past year being out of print, we recommend that the Journal should be *filed* on receipt; it then forms an accumulating useful work of reference.

BOHEMIAN TIN MINING COMPANY.—"T. J." (Newcastle) who writes respecting the sending of Cornish miners to Bohemia (as referred to in the Journal of April 20) should write to the offices of the company, 10, Great College-street, Westminster, London.

WET COPPER PROCESS.—Will "F. H. N." (Journal, April 20) communicate and state his requirements to C. H. Allcred, 24, Duke-street, Grosvenor-square, London?

SIR,—Could any of your correspondents inform me if there are any machines for mechanical stoking for boilers, for preventing smoke and economising fuel, on the Continent; and, if so, what kind of machines?—A. R.

SHARE DEALING.—We never interfere in the sale or purchase of shares; neither do we recommend any particular mine for investment or speculation, or broker through whom business should be transacted. The addresses of most of the latter appear in our advertising columns.

IMPORTANT NOTICE—REDUCTION OF POSTAGE ON THE "MINING JOURNAL."—In consequence of the new POSTAL CONVENTION, which came into operation on July 1, the postage of the *Mining Journal* to many countries will be reduced to one fourth. Henceforth the subscription will be 1*l.* 10s. 4d. per annum (39 frs.), postage included, for the following countries. The amount will, if desired, be collected at the subscriber's residence at the end of each year. The subscription continues until countermanded:—Austria, France, Belgium, Denmark (including Iceland and the Faroe Islands), Egypt, Germany, Gibraltar, Greece, Heligoland, Italy, Luxemburg, Netherlands, Norway, Portugal (including Madeira and the Azores), Roumania, Russia, Servia, Sweden, Switzerland, United States, Malta' Turkey, Morocco, Tunis, and the Canary Islands. Spain 1*l.* 19s. (50 frs.)

Received,—F. M. F. Cazin (Bernalillo, April 12)—"Bournonite" (Toronto, April 11 and 17)—H. Sewell (San Francisco, April 9)—"W. M. T."—"W. X." (Carn Marth): We always recommend that full enquiry be made before transacting such business, and even that references be exchanged, for mutual satisfaction. The matter is noticed in another column, as desired—"Raleigh"—"Share holder (Old Treburgett)—"Constant Reader" (Bath) should write to the secretary of the company—"Orion" (Tavistock): The letter could only appear with the writer's name appended, as that to which it refers had—G. Peacock (Starcross)—"M. W"—"W. D M." (Great Wheal Rodd): See notice under the heading in last week's Journal—"D. C. D." (Oswestry): There is only one London broker of that name We know nothing of the action beyond the particulars given in the Journal—"A Constant Reader" (Incorrect Quotations)—"Shareholder" (Wheal Crebor)—"W. S." (New Quebrada).

THE MINING JOURNAL,

Railway and Commercial Gazette.

LONDON, MAY 4, 1878.

LINCOLNSHIRE IRON AND IRONSTONE.

Owing to the peculiar and isolated position of that part of Lincolnshire in which the iron furnaces and ironstone works are situate, few persons, even those connected with the trade, are evidently aware of the extensive area of ground which is covered with the ore, or of the quality of the mineral itself. The locality is certainly not easy of access, there being but one line of railway to it from Doncaster, the trains for passengers running at wide intervals. However, those who formerly knew the place and now pass through it will not easily forget the sudden transition from a barren and swampy uncultivated level to a plain of brown earth, with 21 blast-furnaces, most of them of a large size, close to each other. Opposite the Frodingham Station there are four furnaces belonging to the Messrs. CLIFT, two of them being in blast, whilst at no great distance from them are the two belonging to the Redbourne Company, and seven to the late Mr. W. H. DAWES. Then there are lower down to the south four belonging to the North Lincolnshire Company, two to the Appleby Company, and two more to the Lincolnshire Smelting Company. Unfortunately, however, owing to the depressed state of trade only 10 of the 21 are in blast, but as of late there has been a decided change for the better, more of the furnaces it is expected will be shortly blown in. But the rapidity in the growth of the district, so far as iron is concerned, has been something that may fairly be termed extraordinary.

About twenty years ago where the works now are was a large rabbit warren, and as such only was looked upon by the then owner, Earl BEAUCHAMP, as of no real value. He exchanged it with the late Mr. C. WINN, of Nostel Priory, Wakefield, and it now belongs to his son and successor, Mr. R. WINN, M.P., one of the Lords of the Treasury, who is the owner of 5522 acres in Lincolnshire. By accident, it is said—as was the case in Cleveland—the ironstone was discovered, and soon the face of the locality was changed. The agent of the estate, Mr. J. ROSEBY, who had had considerable experience of the Cleveland ore, at once appreciated its value, and soon found persons willing to work it, one of the first being Mr. G. DAWES, the present owner of the Milton and Elsecar Works, near Barnsley. After some time the latter gentleman erected a furnace, and so well satisfied was he as to the iron made that he built two more, and ultimately these were increased to seven. In 1868 the number of furnaces in Lincolnshire was six, when 13,765 tons of pig were turned out; in 1872 the furnaces had increased to nine, the production of iron for the year having been 36,839 tons, and now, as before stated, the number is 21, all of which were erected up to 1876. This shows that the progress has been of a marked character, and that the iron has been well adapted for the ordinary markets. It has been found suitable for foundry as well as mill purposes, and when the stone is judiciously selected it can be made to suit any requirement. The stone has certain advantages over most others. It contains a large percentage of lime—in some instances more than is required for smelting—so that a great saving is effected in that article, which has frequently to be brought from a considerable distance to the furnace. Then the stone in some places gives a very high average of metallic iron, and has a very small portion of phosphorus, more especially as compared with the Cleveland stone. In the Memoirs of the Geological Survey the analysis of the latter gives 1·86 per cent. of phosphine acid, and 39·92 of protoxide of iron. Of some of the Lincolnshire ores that were selected for analyses, and sent to Mr. JOHN PATTINSON, of the Laboratory and Assay Office, Newcastle-on-Tyne, the following were the results:—

	No. 1.	No. 2.	No. 3.
Peroxide of iron	67·00	72·14	57·86
Protoxide of iron	nil.	nil.	nil.
Protoxide of manganese	0·31	0·62	0·24
Alumina	4·20	3·47	7·10
Lime	1·82	1·73	2·92
Magnesia	0·36	0·31	0·69
Carbonic acid	1·27	0·23	1·67
Silica	9·87	8·00	14·17
Sulphur	0·02	0·03	trace.
Phosphoric acid	0·70	0·57	0·80
Combined water	12·10	11·24	10·24
Moisture	2·17	1·59	4··9
	99·82	99·90	99·98
Metallic iron	46·90 p. ct.	50·50 p. ct.	40·05 p. ct.

Some of the ores do not, of course, reach any of the above when taken together, although the analyses made in very many instances give them fully as high, and all show a very small percentage of phosphoric acid and sulphur. This fact taken in connection with the recent discussion on the paper of Mr. I. LOTHIAN BELL, showing that he had been able to eliminate the phosphorus from Cleveland pig, and so fit it for the Bessemer converter, has roused some of the ironmasters in Lincolnshire to consider what could be effected in the same direction with their own iron. They argue if such could be done with Cleveland iron, how much easier the same could be accomplished with their own iron. Mr. ROSEBY states that a very fine quality of iron, suitable for almost any purpose to which that metal is applied, could be easily produced, all that would be required being care in the selection of the stone. At the Appleby Works the stone appears to be of good quality, the average yield showing 38 50 per cent. of metallic iron, but analyses in same instances have given as much as 50 per cent., but nearer to Doncaster the average is not so large.

At the works alluded to, whilst visiting them a few days ago, we saw some thousands of tons on the ground, which had been purchased some time since, and held for the owner. It appeared to be of good quality, close and bright, and a considerable tonnage, we were informed by Mr. W. ROSEBY, is sent by him into Staffordshire. The stone here has rather too much lime in it, but this is overcome by mixing with it stone from the mine close to the City of Lincoln, which readily absorbs the excess. Large quantities of the stone of Lincolnshire, it may be said, find their way into Staffordshire, Derbyshire, Yorkshire, and other iron-making counties, and from the special qualities to which we have alluded it has been found to be an advantageous mixture with the local ores. At the present time the production is at the rate of close upon 50,000 tons a month, but this could be very greatly increased, and will no doubt be so when the trade of the country improves, and iron and steel are once more in the ascendant, for Lincolnshire is undoubtedly intended to take a much higher place as one of our great iron centres than she has yet attained. There must be very many miles of iron ore now lying fallow in several directions, and as time progresses these will be tapped as required. Some of the best known ironmakers in the kingdom are now taking the ores of North Lincolnshire, either to smelt separately or with others.

The Staveley Company, Derbyshire, one of the largest in England, are working the Frodingham glebe lands, and sending direct to their furnaces a considerable tonnage, whilst some of the land adjoining, belonging to Sir R. SHEFFIELD, of Normanby Park, is yielding a considerable quantity of ore as well. The Parkgate Iron Company, near Sheffield, are lessees under Mr. WINN. Amongst the others who are lessees of Lincolnshire ore are the Kiveton Park Company, near Sheffield, and the West Yorkshire Coal and Iron Company, near Leeds. These lessees work the stone close to the surface, and consequently do not come under the provisions of the Mines Regulation Act. The only actual mine in connection with ironstone in the county appears to be that situate about a mile out of the City of Lincoln, of which Mr. W. ROSEBY is the managing director, and in whose company we paid a visit to it a few days ago. The works are well laid out, and the plant is fully up to the requirements. There is a drift in one direction about 300 yards in length, the roof being well supported with heavy wood props. The section of the stone is good, being solid, and from its weight containing a large percentage of metal. A short distance from the pit is Greetwell, where the stone is well developed in an extensive cutting. On analysis some of the stone has given upwards of 50 per cent. of metal. A considerable stack was on the ground, all large stones, of which Mr. COOKE (Cooke and Co., Limited, Sheffield) took samples, for the purpose of chemically testing their value.

The description we have given of what the present state of the iron mining in Lincolnshire is will give some indications of what it is capable of, for, rapid as has been its growth, it cannot be said to have yet got beyond childhood. As the ore appears in every way capable by attentive manipulation and care in selection to be converted into Bessemer steel, the spirit and enterprise already exhibited by those who own the ironworks cannot fail, we think, to ultimately lead them into that important branch of the trade, which is now about the only one that can be said to be really remunerative.

A NEW FISH TORPEDO BOAT—NEW EXPLOSIVE MATERIAL.

It is no more than what might be expected, when the country is all but involved in war, and the distructive power of the Whitehead and other torpedoes so well known, that the attention of our scientific men should be directed to the inventing and perfecting of projectiles and machines, not only to protect our own vessels, but capable of inflicting injury on those of our enemy. England having the largest fleet, and the most powerful armament of any nation in the world, with an immense coast line and mercantile fleet to protect, must be prepared to encounter, or rather counteract, those terribly destructive emissaries of war that are dispatched under water, and that so recently did such serious damage to some of the Turkish vessels. That we shall not be found wanting when the emergency arises for preventing the Whitehead or any other torpedoes from doing our ships of war serious injury we feel assured, and as the inventor of the most devastating of submarine monsters is an Englishman, we believe that some of his countrymen will be able to invent some equally destructive machine that will be able to checkmate it when it has been sent on its life-destroying journey through the water. That this can be effected we have already very strong evidence, for a few days ago we had placed before us a model of what is termed the "Fish Torpedo Boat," which is designed to work under water, under the guidance of several men. The model, which was about 4 ft. 8 in. in length, had been tested on several occasions, and done all that was required of it. In its early stage it was designed by the late Lord MILTON, who devoted a great deal of time to mechanical pursuits, in connection with a Mr. TURNER, of Wentworth, and has recently been improved upon by the latter, and Mr. WHITE, engineer, of Thorpe Hesley, near Rotherham.

The boat in every respect resembles a large fish, having neither mast nor other impedimenta on the deck, which is completely covered over. In the head are two large eyes, through which a strong electric light can be introduced, showing to those in the boat any torpedo or vessel for a considerable distance, and by this means destroy the one or the other. Above the eyes there is a ram that can be worked with such force as to penetrate almost any vessel, and a port-hole for a revolving gun occupies what might be termed the nostril of the fish. The tail, which is exactly like that of a fish, plays a most important part. It is moveable, or what may be called flexible, and not only acts as the propeller, but being perforated at intervals is utilised for the expulsion of either water or foul air at the will of those inside the boat. Such is the external appearance of the new Fish-Torpedo Boat. Internally the boat is divided into water-tight bunkers or compartments, which are filled with compressed air, with which everything is carried on in the guiding of the vessel, and allowing the men to be under water for several hours at a time. By an ingenious contrivance the boat can be lowered to any required depth under water by taking in a certain quantity of water, and raised again by ejecting it. The rate of speed at which the boat can be propelled by the air is estimated at fully 17 knots an hour. Torpedoes, or rather the explosive material, is carried by an arrangement outside in such a way that they can be detached and discharged against any vessel. The boat can be easily managed, and all the work of attack performed by four or five men, without their being in any way in danger. It is considered that by means of the electric light in the eyes of the fish-boat the keel of a vessel could be seen at a distance of two miles, so that in the course of a very few minutes she could be attacked and destroyed.

We have thus a boat with the most destructive of explosives, capable of working under water at the will of two or three men, and going in any direction that may be desired. If the explosives from any cause could not be made available, then there is the ram and the gun, the latter being worked by hydraulic power and fired by electricity. The gun is of singular construction, and the credit of inventing it is due to the late Lord MILTON, who spent a great deal of time in completing and perfecting it. It is a rotatory one, having four chambers, which are placed like the spokes of a wheel, so that whilst one shot is being fired a second one is being charged, a third spunged, and a fourth cleaned, so that each shot follows the other in rapid succession. Its destructive power is very great, owing to the powerful character of the explosive used, the secret of which is known only to those living who have now an interest in the boat. It is very light, and each charge is enclosed in a copper case 6 in. long and 1¼ in. in diameter, and is at least six times more powerful than ordinary powder.

We were informed by Mr. WHITE that on its being tested 1 lb. of the explosive material brought down 137 tons of ironstone. As the Whitehead torpedo has to be taken a certain distance by boat or steamer before being discharged against any desired object, it is evident that the fish torpedo boat would be able whilst under water to see its approach, and without difficulty destroy it, whilst in its turn it could also act on the offensive, and be as destructive as the torpedo itself. The cost of a boat complete, with all the necessary material, would be less than 3000*l.*, we were informed by Mr. WHITE, who is in possession of the model. The invention has been brought under the notice of the Lords of the Admiralty, and it is to be hoped that they will have it fully and fairly tested, for it is to our interest to keep such inventions, if they are really valuable, to ourselves, instead of allowing other Governments to have the benefit of them. Had we done so with respect to the Whitehead Torpedo, we need not have cared for all the others, for we should have had a weapon of destruction far greater than any other power.

AMERICAN PIG-IRON.

There was some improvement, upon the whole, last year in the American pig-iron trade, notwithstanding the terrible shock which trade and industry experienced in Pennsylvania—which, after all, is the home of the American iron manufacture—in July, 1877 by reason of frightful riots at Pittsburg, and some other points. We are led to this conclusion by the fact that in 1877 the United States produced 2,314,585 tons of pig-iron, as compared with 2,093,236 tons in 1876. The production is still, however, below the mark of recent former years, 2,266 581 tons having been made in 1875, 2,689 413 tons in 1874, 2,868,278 tons in 1873, and 2,854,558 tons in 1872. The American iron trade would appear to have attained its greatest activity in 1873, and, as we shall presently show, there must now be a large amount of capital engaged in the trade which is entirely unproductive. The number of blast-furnaces in the United States at the close of 1877 was 716—231 anthracite, 272 charcoal, and 213 bituminous. The corresponding aggregate of furnaces at the close of 1876 was 712—228 anthracite, 279 charcoal, and 205 bituminous. At the close of the year 1877 there were 270 furnaces in blast, while at the close of 1876 there were only 236 furnaces in blast. This was *prima facie* satisfactory, but still the awkward fact remains that in December, 1877, there were no less than 446 furnaces out of blast in the United States. This leads to the irresistible inference that, although probably some improvement took place in the American pig-iron trade last year, still the trade remained, upon the whole, in an unsatisfactory position, as the appliances existing for production were only utilised to the extent of about one-third. The manufacture of American pig-iron would appear to be centreing more and more in the great industrial States of Pennsylvania and Ohio; in other parts of the American Union the manufacture of iron would seem to be unmistakeable languishing. Thus we find that of 24 furnaces in Maryland only 6 furnaces were in blast at the close of 1877, while of 33 furnaces in Virginia only 5 were in blast. In various other States the outlook was almost equally disheartening. Thus of the 7 furnaces existing in North Carolina everyone was out of blast at the close of 1877; of 11 in Georgia only 2 were in blast, of 13 in Alabama only 7, of 12 in West Virginia only 2, of 22 in Kentucky only 7, of 22 in Tennessee only 6, of 8 in Indiana only 1, of 12 in Illinois only 2, of 32 in Michigan only 9, of 15 in Wisconsin only 4 and of 18 in Missouri only 2. The American iron manufacture would thus appear to be more and more monopolised by Pennsylvania and Ohio.

There is one circumstance we ought to note as calculated to afford encouragement to American ironmasters; this fact is the marked increase which was observable in the consumption of pig-iron in the United States in 1877. Thus, although the production was greater last year, the stocks in the hands of makers were reduced during the twelve months. At the close of 1876 makers' stocks stood at 686,798 tons, while at the close of 1877 the corresponding stocks had been reduced to 642,351 tons, showing a difference to the good of 44,447 tons. The imports of pig-iron into the United States in 1877 stood at 66,871 tons, while the exports of pig-iron from the United States last year did not exceed 7687 tons, showing an excess of imports over exports of 59,184 tons. Altogether, it would appear that the consumption of pig-iron in the United States last year amounted to 2,418,216 tons, as compared with 2,172,503 tons in 1876. This is satisfactory, as it supports the conclusion that the production of 1877 was of a *bona fide* and not a speculative character. But the great difficulty with which American ironmasters, in common with English ironmasters, had to contend last year was the low prices—the ruinously low prices—current for their products. These low rates practically deprived capital during the year of the remuneration to which it is legitimately entitled.

ROCK-BORING MACHINES.—We understand that the eminent firm of Messrs. Jules Chagôt and Cie., of the Blanzy Mines, exhibit in the Paris Exposition a stand for sinking pits mounted with two Darlington-Blanzy Machines, a second stand for driving inclined level fitted with two Darlington-Blanzy Machines, and a fifth Darlington-Blanzy machine in parts, so that the piston, turning gear, and distributing passages in the cylinder may be separately examined by the visitors. The Darlington boring machines are solely employed at the Blanzy Mines, where an important pit is now in course of sinking.

AMERICAN STATE SUPERVISION OF MINES.—Within the last 30 years the State of California has produced precious metals to the value of $1,200,000,000 and Nevada has yielded $400,000,000, and Mr. Henry Sewell now sends particulars as to the opinion prevailing with regard to the proposed State supervision of Mines. It is stated that much of the funds contributed as calls has been squandered by mismanagement or dishonesty, while a course of unscrupulous secrecy as to developments in the mines has been persistently pursued by nearly all the corporation trustees, to the injury of stockholders and the mines. Yet the Legislature has as yet taken no step to remedy this evil by putting the mines under proper State supervision. There is no way of obtaining reliable information of the progress of developments in the mines, or even of the actual annual product. Thus the intelligent capitalist, both at home and abroad, must seek his information at great expense and at the risk of being deceived. The tendency of such a condition of things is to discourage investments by prudent people in mining enterprises. And the difficulty is enhanced by the evil of the stock market, which has converted the mines into mere instruments for gambling. The loss to the people of this State from this cause alone aggregates many millions every year. A better scheme for concentrating the money of the country into the hands of a few men could not be devised. It is rapidly leading the country to a state of hopeless bankruptcy. Capital is naturally aggressive, but under this system it is omnipotent. It not only absorbs the wealth of the people, but it is corrupting their morals and cultivating habits of idleness. There are to-day around the stock boards and brokers' offices in this city enough men of talent and energy to more than double the gold product of this State if they could be induced to devote their enterprise, courage, and capital to legitimate mining instead of to stock gambling. The Tuttle Mining bill proposes reforms which, if honestly carried out, will do much to secure such a desired result, and if this Legislature does not pass the bill it will neglect an opportunity to render the State an invaluable service.

STEAM TRAM-CAR—(APSEY'S PATENT)—The inventor and one of the directors of the Universal Tram Car Company, of 35, Finsbury-circus, London, made a third trial of their new car on the night of the 26th inst., and for three hours were running it forward and backwards along the roads between Bricklayers' Arms and Deptford Broadway. Upon this road the ordinary tram cars require three horses to draw them. The way in which "La Toneyette" behaved herself was admirable in the extreme, skimming noiselessly along up the inclines and over the three bridges like a swallow over the hill tops. To those who are unacquainted with this new invention, which may now be looked upon as the future mode of street and suburban locomotion, the following particulars may be of interest. This is a self-contained car, with accommodation for passengers, 22 in and 22 outside; the latter are protected by a light metal awning. The car body is fixed on a rigid iron platform, which is mounted on two four-wheeled bogies; one of these bogies is fitted with a pair of horizontal engines, and the power is transmitted to the main axle of the bogie by tooth gearing, and the axles of the bogie are coupled up in the ordinary way; the other bogie is fitted with powerful hydraulic brakes. The boiler is a vertical one, fixed at one end of the platform, but allowing free ingress and egress to or from the body of the car. When repairs are necessary to any one portion, whether boiler, engines, or car-body, that portion can be readily detached, and all the parts being interchangeable, can at once be replaced by a spare corresponding part, without causing the entire car to be idle during progress of repairs to any one portion. The car-body being quite a separate structure in itself, it will be easily seen that existing car bodies can be utilised when mounted on the platform of this system. The length of the car over all is 26 ft.; its height, including the awning, 14 ft. 4 in. from the rails; the width is the same as the ordinary horse car, and it weighs in all about 7 tons. The consumption of fuel is calculated at 4 cwts. for a day's work of 12 hours, and there are two water tanks fixed on the platform, so that they are under the seats of the car body, containing sufficient water for a run of three hours. After this last performance the inventor, and those who have been instrumental in bringing about such a successful result, may be sincerely congratulated upon having overcome the difficulties that have been

hitherto attendant upon tramways worked by steam, and for them, as for those who may hereafter join in the undertaking, a large and profitable business may be safely expected.

REPORT FROM CORNWALL.

May 2.—April closed anything but satisfactorily, the last movement for the month in the tin standard being another drop of 1s. Nor does May open any more brightly. Foreign affairs still drag their tedious length along with such wearisome iteration of uncertainty that it would almost be a relief to know the worst, only that that would bring no improvement to the home concerns. The one thing of general importance that seems to be in a flourishing condition just now is the Paris Exhibition, to which not a few West Country manufacturers and others have contributed, though we are not aware that mining is in any special sense represented. The manure manufacture is certainly associated with mining in the use made of pyrites in the manufacture of sulphuric acid; and in this department Messrs. Burnard, Lack, and Algar, of Plymouth, are among others very large contributors. Messrs. James and Son, of the same town, blacklead and starch manufacturers, are also represented; and artistically Mr. Silvanus Trevail, architect of most of the board schools in Cornwall. But there are also several more, and a complete list is as yet unattainable.

It is cheering amidst all the signs of depression to find the feeling so confidently entertained and so widely held that even if no substantial improvement takes place for a few months we shall find the truth of the old proverb that "necessity is the mother of invention" still further developed by enabling our mine managers to devise means of coping with the present untoward condition of mining enterprise. Even now things are being done that would have seemed utterly impossible only five years since, and the man who would then have said that dividends would continue to be paid with black tin at 37*l.* a ton would almost have been considered a lunatic. While there is no sign of exhaustion in our lodes we may always hope—in fact, we may be certain—that in the long run skill and ingenuity, aided by science, must win the day—Mount Bischoff with its wonders notwithstanding.

It will be an unfortunate thing for Devon Consols if the dispute there is not brought to an early termination. Already there are indications that some of the best men will leave. Several have returned their powder cans and materials, and do not intend to return, as even under the four-weeks system the wages are so low that there is but little encouragement to go back. They say that as ordinary labourers they can get 18s. per week, and that this is as much as they are allowed to earn at the mines. Should the strike last much longer the chief part of the young and able-bodied men will have left, never to return, and only the old and feeble will remain. On this ground alone, therefore the directors are inflicting a very serious injury on the mine, and will have to answer to the shareholders for making such a sacrifice of young blood. It is all very well to talk of being able to supply the mine with as many men as are wanted from Cornwall. Quite independent of the fact that the resistance to the five-weeks month has the support of miners throughout the two counties, it is idle to think that good men will make a change of this kind, even were the conditions equal, for the sake of changing. The number of thoroughly competent and able-bodied miners out of work is very small (they have for the most part emigrated), and those who are available are the old and infirm and the very young and inexperienced. Devon Consols has everything to lose and nothing to gain by employing such.

On Saturday about 300 miners assembled at Devon Consols to ascertain if any reply had been received from the directors in reference to their attempt to reimpose the five-weeks month system, but as no answer was forthcoming the men adopted the following resolutions:—"The machinery and engines to work on without any obstruction; the shaftmen to watch or look after such machinery as might be required of them until the next meeting. That thanks be tendered to the Press and to the ministers of all denominations for the sympathy and support they have shown in the struggle." The meeting was then adjourned until next Saturday, to be held at Gulworthy. The strike and difficulty is now entirely confined to this mine, the men at Wheal Crebor having resumed work under the old system. They were asked to go to work on the four-weeks system until the calendar month question was settled, and having held a meeting informed Captain Andrews, the manager, that they were all willing to resume work on the condition that he would guarantee their present contract should cease, and that the next pay should take place on May 18. Captain Andrews promised that this should be so, and consequently the men resumed work on Saturday morning, and will not think of discontinuing while they are allowed to work under the four-weeks system; but Captain Andrews has been told through their delegate that when the calendar month question is settled if the committee still enforce the five-weeks month every man will again stand out whatever the result may be. It will be well for Devon Consols if the directors will acknowledge their mistake by withdrawing their resolution without further delay. They must see now that while on the one hand they stand alone, on the other the men are thoroughly united. If they abandon the effort at once little harm will be done; if they persist a good deal may result.

The only son of Lord Robartes, one of the largest and most liberal landlords in Cornwall, the Hon. T. C. Agar Robartes, has been married to Miss Dickinson, of Kingsweston. Lord Robartes has a good deal of mineral property, and has always been noted for the liberality of his conduct towards the adventurers, being ever ready to lower or even to give up dues altogether to assist a struggling mine. No landowner in the county has proved a stauncher friend to the mining interest, and his son is likely to tread in his father's steps.

Further evidence of the practical value of the Cornwall Mining Institute has been supplied this week by the important discussion which has taken place on the Tin Fields of Tasmania. We have never had this subject placed more clearly before us than in the paper of Mr. Mufford,* and in the subsequent discussion; and it is very satisfactory to find the result so reassuring. Whatever may be said of the Tasmanian tin deposits in general, and of those of Mount Bischoff in particular, it is very evident that there is not much to be feared from them, and that ere long it will be with Tasmania as it is and has been with Australia; so much, therefore, for what we may call the Tasmanian scare. Of all the tin-producing countries of the world, Cornwall the oldest, and long the only one, alone shows any distinctive signs of permanence.—[* We shall publish Mr. Mufford's paper in next week's Journal.]

THE TIN MINES OF TASMANIA.

The monthly meeting of the Mining Institute of Cornwall was held at Camborne, on Tesday, Capt. WM. TEAGUE in the chair. There was a large attendance.—In opening the proceedings the CHAIRMAN said it must be satisfactory to most of them to have a paper read on such an important subject as that upon which Mr. Mufford intended to read that day. More especially when it was read by a gentlemen who had been there and spent a considerable portion of his time on the spot—a spot which was held up before them, and which, if it did not frighten them, would make them stand rather aghast. They had it from the same source that in Tasmania they could raise as much tin as they like, and that Cornwall was going to be left behind in the race, and, he believed, be almost shut up. From other sources they heard that the amount of tin did not exist in Tasmania; and so to him it was a source of great satisfaction that they had a gentleman who would read them a paper from his own observations of the country. To them, as Cornishmen, and connected as they were with Cornish mining, it must be interesting, and he trusted they would get that information which was so desirable, as up to the present time they had had no information that could be relied upon. He had, however, no reason to believe but that the paper to be read to them that evening was a truthful and faithful one. Those present were not the class of people who wished to have things to tickle their ears, and afterwards have to dance for it. (Hear, hear.)

Mr. MUFFORD said that in six months 251 tons of tin had been exported from Tasmania, and he calculated that the total quantity for a year would be 4500 tons, the whole of which was from the alluvial washings. The central part of the Tasmanian tin-producing district comprised the Upper Ringaroom, Thomas's Plain, and the Blue Tier, and was situated on a plateau from 15·0 to 2300 ft. above the level of the sea. The whole of this district was covered by a dense forest, and after the tin was got out and prepared for smelting, it cost the producer from 10*l.* to 14*l.* per ton in transit, the nearest port being some 40 miles distant, and the roads bad. From this district the bulk of the tin was produced. The works were mostly conducted on the co-operative principle, and a few had paid the holders some good profits. By far the greater number of the tin works were, as in all the colonies, in narrow gulleys and small flats situated between the rapids, and containing at most a few tons of tin ore. The speaker next referred to the difficulty and cost of removing the deep beds of rubbish in order to get at the deposits, and went on to speak of the necessity that existed of reducing the cost of labour, giving statistics to prove that the cost of production tallied as nearly as possible with the returns. In fact, tin mining could not be made a remunerative speculation until better roads had been opened up. No public company had yet paid a dividend, and the tin that was produced at any profit at all was that produced by a few co-operative parties. He acknowledged that the Mount Bischoff works were rich in their deposits, but he accounted for the dividend of 100 per cent. on the paid up shares by the fact that the company, as a mining and smelting company combined, made an extra profit in that way alone, while it was augmented by the profit arising from their smelting other mining companies' tin. Then the company was in 12,000 shares of 5*l.* each, out of which upon 7400 shares 1*l.* had been paid, and this was what was known as the paid up capital, so that the 100 per cent. dividend had been paid on an outlay of 7400*l.* He believed that the Tasmanian mines had reached the summit of their success, and that a falling off was bound soon to ensue. (Applause.) Mr. Mufford exhibited some very rich specimens of Tasmanian tin, which had every appearance of ordinary lode tin, but much more "tinny" than that generally found in Cornwall.

Capt. RICH said they were all obliged to Mr. Mufford for the very clear and lucid explanation he had given of the Tasmanian tin fields. He had no doubt that all present were pleased with the fairness and truthfulness of the paper. There was one question he would like to ask, and that was that from some letters he had seen he thought the railway was within 43 miles from the Bischoff Works, and he was surprised to learn from the paper that had been read that it was only within 150 miles. Also that they had paid 100 per cent., which seemed to him enormous without the explanation they had just received. If they could not do better than that, he thought they had no need to shut up yet.

Mr. MUFFORD stated that the returns for the next six months must necessarily be less than the last six months, because the company had to depend upon the rain to wash down the tin. There were 7400 adventurers' shares, and the remaining 4600 were promoters' shares, these having been appropriated to compensate Mr. Smith and those who assisted him in bringing the company out. He, in reply to the Chairman, said that the only blasting was done for the purpose of breaking already broken stuff—not solid rocks.

Mr. W. H. RULE asked whether the increase in the returns from 400 to 1300 tons was on account of their buying from other companies, or raised out of their own claims?—Mr. MUFFORD said it was raised out of their own claims.

Capt. TEAGUE said that the modest manner in which Mr. Mufford had introduced his paper had great weight with him. He thought they could not hear too much about Tasmania, as any information from that quarter would help them to shape their course accordingly. Australia was not forever going to produce tin at the present miserable prices, as no one could live with them. That was a fact which was as well to be known as kept behind the scenes.

In answer to a question, the Lecturer said in order to export tin into this country from Australia, they ought not to have less than 70*l.* per ton.

Capt. ABRAHAM JAMES read a letter on which there was no date, and which he said was very like some letters that had been written to the *Mining Journal* from Bath. It was very high-coloured with regard to the produce of Tasmanian tin, and compared the Tasmanian tin fields to the Cornish tin fields in the times of the Phœnicians. The tin fields were indeed tin quarries, each blast bringing down hundreds of tons; the faces were in some cases 60 ft. high, and the returns did not even then deteriorate; and the letter he read gave information as to the richness of several lodes, which, however, would not pay for working, so that in two years they would have nothing to fear from Tasmania in England.

Mr. MUFFORD replied that the first letter read by Capt. James was a one-sided affair. He did not believe that the Belmont fields were worth further trial.

Capt. RABLING read a letter from a friend in Tasmania which stated that new discoveries were being made every month; and that tin could be sent to market for 15*l.* a ton, although the miners earned good wages and the mine was 40 miles from Launceston—the nearest town.——Mr. MUFFORD replied that he knew the writer of the letter, who had always favoured his (the speaker's) theory.

Mr. HUSBAND asked how they were to know that these deposits would extend to any great distance—had they sunk trial pits, or had any means been used to ascertain the quantity deposited?——Mr. MUFFORD said that they could not get far into the ground on the west before they reached sandstone—not a very promising stratum; on the east they met with a clay-slate bottom; on the north they also had a clay bottom and had phorphyry rock staring them in the face; while they entered on the south side and took away the stuff just as it came to hand. (Loud applause.)——Votes of thanks were passed to Mr. Mufford and the Chairman.

TO THE CORNWALL CORRESPONDENT OF THE MINING JOURNAL

SIR,—I am rather surprised at the purport of your remarks in last week's Journal relative to the state of the Cornish tin mines, and should be glad to believe them, but in the face of your official list, showing that not one-tenth of your tin mines in work are paying even the shadow of a dividend, I cannot help holding to my opinion that your tin mining industry is played out, and that in the face of steadily falling prices even the remnants must succumb. Being myself interested in Tasmanian mines, and receiving their reports, and having also been a resident in that colony many years, I must indeed be very ignorant if I do not know something about Tasmanian tin mines, and the price at which we can produce tin; this I have communicated to some of the principal firms in Cornwall, who admit the facts, though you may continue to deny them, and so I am content to leave the matter. A rising market for tin would be as much in our favour as yours; but taking the position as it is, would it not be wiser and kinder to encourage your workmen to emigrate to a land of plenty, where females do not work like navvies, as I stated four years ago; where miners are only required to work for high wages eight hours a-day in the finest climate in the world, and can have cheap food, with a freehold homestead obtainable for every family?—*Bath, April* 30. F. D. WICKHAM.

TRADE OF THE TYNE AND WEAR.

May 2.—The shipments of steam coal during the week have been heavy, and most of the large works in Northumberland are now employed five days per week. There is, therefore, a great improvement in the prospect for those works. The Nedderton Colliery, which has been closed for some time, is not likely to be started again by the present owners, as they wish to sell the concern. There has been a great fleet on the Tyne during the week, and many large sailing vessels and steam ships have loaded steam coal in the Northumberland Docks. Some of these vessels are of very large size, and the business to the Baltic ports continues to improve. The shipments at Tyne Dock have been considerable also, but scarcely up to an average. The gas and house coal trades are very quiet. At Cramlington and Shankhouse Collieries the men have offered to accept a reduction of 2*l.* per ton, and the masters are likely to accept this offer, the reduction asked for was 3*l.* per ton. There is a dispute at the Dudley collieries respecting a reduction in rates the masters wish to enforce, but which the men have not as yet accepted. In Durham an important change has been introduced, the hours of drawing coals having been increased from 10 to 11 hours per day; this will increase the quantity of coals drawn per day, and it will also enable the men and boys employed to earn higher wages, but the most important effect that may be looked for is a reduction in the cost of production, which will increase the chances of the colliery-owners to make some profit, and also secure orders in the markets for coal and coke. It may be objected that the change will increase the output, and thus increase the difficulties of the position, but the continual closing of the worst works which has been going on so long still continues, and this movement must proceed until the demand equals or exceeds the supply, and when that position is achieved fair profits will be secured by the colliery-owners, and good wages will be earned by the miners. Of course any increase in the output at each working pit has a direct tendency to reduce sensibly the cost of raising the coal. This change will also have the effect of reducing the number of boys employed in the mines under 16 years of age, and ultimately it is probable that they will be excluded altogether from the pits until attaining that age. The effect of all legislature in the employment of boys in factories has been in this direction, as employers do not like to have boys who are unable to work the number of hours the factory runs per day, or the number of days worked per week. At the pits in Durham the boys are now employed 11 hours per day under 16 years of age, and the coal hewers are seven hours per shift underground. At Tudhoe Colliery there has been a series of disputes and partial strikes, some of the men had accepted the reduction of 10 per cent. demanded by the masters, and were at work, but it was necessary to escort them to and from their work by policemen. However, it has now been determined to stop the works altogether, and thus terminate the unfortunate contention.

The iron shipbuilding trade continues to improve, and most of the yards on the Tyne and Wear, and also the marine engine and boiler works, are pretty well employed. Messrs. C. Mitchell and Co. have seven vessels on hand. The twin steam Express is ready to be dispatched to her station in the English Channel. Messrs. Leslie's works and the iron shipbuilding yard at Jarrow are full of work. Two torpedo boats built at Jarrow have made their trial runs this week.

A general meeting of the North of England Institute of Mining and Mechanical Engineers will be held on Saturday, when a number of new members will be elected, and the following papers will be read:—"On Mechanical Stokers for Colliery Boilers," by Mr. Alex. Ross; "Canadian Coals: their Composition and Uses," by Mr. Edwin Gilpin, M.A., F.G.S. The meeting of this Institute in France will commence at Douai, on June 4; the members afterwards to attend a Congress at the invitation of the Société de l'Industrie Minerale of St. Etienne.

The iron market at Middlesborough on Tuesday opened with a very quiet tone, the political situation and its probable results being apparently the chief consideration. The trade doing was extremely limited. The "bears" are very active endeavouring to reduce rates, and makers are compelled to give way to some extent. It is asserted that 39s. and less had been taken for No. 3, less 1 per cent., but 39s. 3d. to 39s. 6d. was the general quotation of makers. No. 4 forge is 48s. 6d., less commission. The holiday season having passed, shipments have begun to improve somewhat. Foreign deliveries are still, however, kept back, owing to the position which the Anglo-Russian difficulty holds. It is generally said that no hopes for the future can be entertained until the quarrel is definitely settled. There is a pretty prevalent opinion that trade would really revive if some arrangement were made, and the European concert again established. There is a steady trade being done in plates, but no fresh work is coming to hand just now. There are, however, fair expectations on account of the shipbuilding orders which are being given out, principally in the North-Eastern ship yards. Of late there has been a quieter demand for plates from the Clyde shipbuilders. The marine engineers show a fair extent of activity, and they have been briskly engaged throughout the winter. General engineering establishments in the North of England are better employed than they were some time since. The dispute with the puddlers at Stockton has been finally arranged.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

May 2.—Orders in the iron and coal trades which accumulated during the recent holiday time are being worked at this week with some vigour, but the demand which they represent is for the most part limited to the satisfying of immediate requirements. There is no falling off in the demand experienced at the collieries where furnace and forge coal is mined, and the pits are running with regularity. Consumers have the market pretty much in their own hands as regards prices, and it would be well if list quotations could be more nearly assimilated to actual prices than is now the case. The house coal trade is declining as is customary about now. The pig-iron trade is no worse than it was. With a view to blow out their furnaces at any time if found necessary there are firms who have reduced their stock of materials to a minimum, and at the same time there are others who are taking steps by which they will be enabled to light additional furnaces upon the shortest notice if they should deem such a step desirable. Admiralty orders for heavy sections are helping to keep two or three A 1 finished iron makers active, but on private account there is not much doing, except in gasometer sheets, girder-plates, and best sheets.

There is considerable discussion amongst traders hereabouts as to whether the arrangement for reduced output in the tin-plate trade is likely to succeed in effecting the desired object. The pessimists assert with some truth that there are leading makers in this district and elsewhere who decline to act with the general body, and therefore they do not anticipate any great results. Evidence of the necessity for some such action as has been taken is found in the circumstance that coke-plates are now selling at 14s. 6d. per box.

An extraordinary meeting of the shareholders of the John Bagnall Ironmaking Company was held in Birmingham, on Tuesday, to consider the scheme for the reconstruction of the concern, by which it is proposed to reduce the issued share capital of 160,000*l.* to 48,000*l.* by reducing the 10*l.* shares to 3*l.* each, and to raise an additional 96,000*l.* by 48,000 5 per cent. preference shares of the nominal value of 3*l.*, 1*l.* of which is to be considered as paid-up. Several shareholders spoke against the scheme, prominent amongst them being Mr. Buckingham, of London, who characterised it as "attractive," but fallacious and very unjust upon the original shareholders. The meeting was almost unanimous in its opposition, and a committee of shareholders were appointed to confer with the directors to see what can be done.

The third annual meeting of the Hamstead Colliery Company was also held in Birmingham on Tuesday. The report, a summary of which has already appeared, was adopted with but little discussion, satisfaction being generally expressed at the progress of the sinking and the state of the concern as a whole. The retiring directors were re-elected.

Business in coal and iron properties on the Stock Exchanges is very dull, transactions being infrequent. The directors of the Cannock and Huntington Colliery Company have just called up another 2*l.* per share.

The North Staffordshire iron trade manifests a little improvement in the shipping department. The larger sections are in somewhat better request, but the mills devoted to the manufacture of medium sizes are doing most. The pig-iron trade is brighter. Coal is in greater supply than the market needs.

REPORT FROM MONMOUTHSHIRE AND SOUTH WALES.

May 2.—Competition and depressed trade have caused the Newport Dock Company to cease dividend paying, and for the fourth time, I believe, the shareholders have had to go away unsatisfied. The Alexandra Dock Company have taken away a large portion of the traffic of the old dock, but when the new scheme for connecting Newport with the Rhonda Valley comes into operation then, no doubt, the old dock will share with the new in securing a fair portion of the great traffic which must accrue. At the Neath Petty Sessions Mr. Williams, the manager of the Duffryn Main Colliers, has been summoned for allowing Edward Bodycombe to control the engine and machinery, he not having a certificate of competency from the manager or mechanical engineer. The engineer and engineman were similarly charged, but the case was dismissed on a legal point. The inquest on the men who were drowned at the flooding of the Western Moor Colliery, Neath, has concluded. The jury found that the flooding was accidental, and exonerated the managers from blame. Two men have narrowly escaped being killed in a colliery at Gelligner. The roof suddenly fell in, and the men were entombed for some time. They were got out unhurt. At the Neath Petty Sessions, Messrs. David Morris and Co., of the Vernon Tinplate Works, were summoned for employing 16 females after six in the evening. It was alleged in defence that the girls went into work at their own request in order to make a full week. Fifteen of the cases were withdrawn on payment of costs, and in the remaining the defendants were fined 5*l.* and costs. The Forest Fach Colliery dispute, after lasting for six or eight weeks, has at last been settled. The colliery belongs to the Landore (Siemens'-) Steel Company, and is situated near Swansea. The disagreement had reference to the working of clean coal. A meeting of about 700 colliers has taken place at Tonypandy, Rhonda Valley. It appears that the men at the Blaenclydach Colliery have struck work owing to a proposition on the part of the employers to substitute monthly payments with fortnightly "draws," for fortnightly pays, which latter is said to be the custom at house coal pits. The meeting approved of the conduct of the men.

The iron trade has not materially altered during the past few days, and although some few fair orders have been recently received, yet prices are not in such a state as to make the execution of requirements profitable. Clearances during the last few days have been small, and generally business wears an aspect of extreme depression. Nor is dulness confined to the iron industry, for the steel trade shows many signs of inactivity, and there is certainly not so much doing at the local works. At one or two of the establishments a reduction in wages has come into operation, and it is evident that masters are alive to the necessity of decreasing the cost of consumption as much as possible. The demand for railway iron continues poor, and no signs of improvement are manifested in this branch. The same may be said of the bar-iron department, although during the last month or so the foreign demand has apparently to a slight—very slight—extent improved. As a rule, the greater proportion of the make is absorbed for local purposes. The tin-plate trade is materially unaltered. The copper trade of Swansea is dull. As for the coal industry, there have again been some fair orders secured, and there is no doubt that South Wales is as well off, so far as the demand for steam coal is concerned, as any part of the country. Shipments of this commodity are exceedingly well kept up but it is unsatisfactory to state that prices are

still at a low ebb, although more firmness is apparent. Freights, too, to the Mediterranean and other parts are improved, and generally trade is brisker. House coals remain in slack request, and patent fuel is in very slow demand.

REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

May 2.—From a report of the trial Brown *v.* Davies, which appeared in a contemporary of April 12, I was unwittingly led to mention incidentally the name of Mr. Thomas Spargo in connection with the Bankruptcy Court. It gives me very great pleasure to be assured and to state that such allusion was an error—a pleasure which is only alloyed by the fact that, led by the report, such allusion was made at all. Mr. Spargo will, I am sure, accept this explanation and apology as freely as it is given from one who, as a subscriber to, and admirer of, his "Atlas of Mining," is glad to be able to look forward to the completion of that work.

Distress is beginning to be felt somewhat severely among the colliers and other miners of this district. Charity in the shape of food is being daily given privately to colliers and others in Mold and the neighbourhood. Many of the colliers at some of the works in Denbighshire are said not to be earning, taking the week through, more than 1s. per day. At Llanidloes, also, public attention is being directed to the best means of relieving the prevailing distress. Some idea of the unremunerative nature of colliery enterprise will be gathered from the fact that the Staffordshire collieries are sending good coals into Shropshire at 5s. per ton at the pits, so that to a considerable extent the Welsh coals, especially the poorer kinds, are driven out of the market.

The workmen at the New Cambrian State Quarries, Glynceiriog, near Llangollen, have accepted a reduction of 16 per cent. in their wages. Mr. Spooner, C.E., the engineer of the Festiniog Railway, has met with a severe accident. He was proceeding on an engine from Portmadoc to Minffordd, when a wagon was observed on the line. Mr. Spooner jumped off the engine, and was severely hurt.

Prof. Rudler, of University College, Aberystwith, has just been lecturing before the Cymyrodion Society, in London, on the Mineral Wealth of Wales.—[A brief notice of the lecture appeared in last week's Journal.] His lecture is a popular *resumé* of our knowledge on this subject, and it should draw increased attention to the mineral resources of the Principality. Would not Aberystwith make a good local centre for a branch school of mines, where pupils might readily attain that practical acquaintance with the principles and details of mining that our great schools, unlike those of Germany, seem to want? Meanwhile earnest endeavours are being made by the professors of science at Aberystwith to form an industrial museum, illustrative of the natural resources of Wales, as well as a museum in the ordinary sense. Circulars have been issued in Welsh to the miners, quarrymen, colliers, and mineral proprietors, inviting their co-operation in this work, and it is to be hoped that the appeal will be responded to.

Mr. Horatio Lloyd sat at the County Court, Mold, yesterday week, to receive applications for comprehension in the Halkyn Drainage Scheme, or any remarks concerning it. Nobody, however, put in an appearance, so that there was not much of an enquiry. Among the upper mines the North Hendre, it is stated, does not wish to be included in the scheme.

REPORT FROM DERBYSHIRE AND YORKSHIRE.

May 2.—At several places the week so far may be called a good one in comparison with three or four previous ones. But this may be said to be merely the result of the holidays, when a stoppage of four or five days has to be made up. The collieries have been working tolerably fair, and for the season a full average tonnage of house coal has been sent from the leading pits in Derbyshire to the Metropolis. Steam coal has been going off rather better, but the question is whether the usual quantity will be allowed to go from Grimsby to the Baltic, which is now open. As war would appear to be almost inevitable, the chances are that the Government will prohibit the exportation of coal to any of the Russian ports, and this will lead to a serious loss to colliery owners in several districts, who from May until the closing of the sea by ice send a large tonnage, of steam qualities in particular, to the various ports. At one colliery a number of the men are still on strike against a reduction of wages, although their average earnings have been 7s. a day. In Sheffield business, as a rule, is still very quiet, and the preparations for war have not brought anything like the amount of trade to the town that was expected. Armour-plates appear to be in a transitional state, although some of the ordinary type are still being rolled. At both Brown's and Cammell's they have for some time been engaged in making and testing mixed plates of iron and steel, and as Sir J. Whitworth at Manchester is also similarly engaged, there is every prospect that there will be a most interesting race. One or two houses are doing a steady business in steel wheels and axles especially for colliery purposes, and from their economy and cheapness they are likely to supersede the ordinary iron wheels. Cutlery, and most of the old staples of the town, are dull, and the men not fully employed.

In Rotherham business is rather better, although the fitters at one place have a dispute with respect to wages. The plate mills have been running well, and the Bessemer rail works are in full activity, with orders in hand that will last for some months to come. The puddlers at Elsecar are still out, although they have plenty of work to go to, but they prefer going about almost begging in preference to accepting the terms of Mr. G. Dawes, which merely relates to roasting the iron a little longer time than they have been in the habit of doing. The coal trade of South Yorkshire is slightly better than it has been, but prices are still unremunerative as a rule. At some of the collieries they have made as much as five days a week, but in the majority of instances the average is four days At Silkstone Hoyland the men are still on strike, but the company appear to have got almost as many non Unionists as they require. The wages paid at the colliery, and in fact in the district, being much higher than are given in almost any other part of the kingdom is a strong inducement for men to come from a distance.

On Thursday night last a cowardly attempt was made to assassinate Mr. T. Kitchen, the underground viewer of the Dronfield Silkstone Coal and Coke Company, where the men have been out with respect to wages, although offered the full average of the district. Whilst in bed Mr. and Mrs. Kitchen were startled by the report of a gun, while several of the bed-room windows were broken. Six of the window panes had been penetrated by shot of a large size, which struck the wall about 18 in. from the bed-head. There is every reason to believe that the atrocious act was committed by one of the colliers on strike, who made good his escape, in all probability believing that he had effected his purpose.

REPORT FROM THE FOREST OF DEAN.

May 2.—Little change has come over the trade of this district since our last report. The slight improvement that then characterised the coal department of business has been, on the whole, fairly maintained, but business can only be done at low prices, which in some cases do not admit of a margin of profit. Crump Meadow Colliery, indeed, is carried on only at a serious loss, and some others scarcely pay their way, and as we are now fairly at warmer weather, if not into summer, it is expected that greater slackness will speedily come upon the sale of black diamonds. The Tin-Plate Trade, too, is in a less buoyant condition, and the men at Lydney and Lydbrook are likely to be put upon part time. This policy is said to have been recommended by the recent meeting of masters at Swansea. The sale of the tin-plate works at Parkend is understood to have fallen through, as Mr. Chivers has had about two acres of ground staked out between Nofold and Church Way, not far from his colliery, and has made application to the Crown for its purchase, but, although matters have gone so far, we are by no means certain that they will result in the erection of the necessary plant at that place. We incline to think that Mr. Chivers would have done well to have adopted a suggestion made to him, and fixed upon the spot between the old Dam weighing-machine and Bilson yard, as by repairing the gap in the dam embankment an unfailing supply of water would be secured. We certainly think Mr. Chivers intends to erect works should the purchase of Parkend Tin Plate Works be finally abandoned, and some—the local public in general, we believe—consider that it is abandoned. The Forest Vale Works continue fairly employed. The distress continues in West Dean, but the sufferers are likely henceforth to be thrown on the Poor Law Union authorities. In East Dean an attempt has been made to assist the distressed by starting making the principal road through Cinderford, but as the committee only offers 1s. 6d. per day the men object to work at that price, alleging that if they should accept such wages the coalmasters and others would be for adopting similar terms. The Cinderford Waterworks, after considerable delay in remedying certain defects of the reservoir and other places, are now reported ready for definite transfer, except that, in accordance with the original terms of contract, a small sum will be held for 12 months as guarantee for any casualty that may occur, so that the expense may be provided against. The local labour prospects being discouraging, numbers are applying for passages to Australia, and many, if free passages could be had for families of several children could be had, would go. Young men, however, find little difficulty in getting passages.

THE COPPER TRADE.

Stocks in Europe:—	Tons.	
Chili ores and regulus, Liverpool & Swansea (equal to fine).	3,960	
Chili bars in Liverpool	13,557	
Ditto Swansea	2,143	
Chili ingots in Liverpool	—	
Ditto Swansea	—	
Foreign copper (chiefly Australian) in London	5,807	
Ditto ditto landing	745	
English copper in London	50	
Chili bars and ingots and Barilla in Havre	9,894	
Other copper in Havre	335	= 36,491
Afloat and chartered from Chili to Europe (advised by mail):—		
Ores and regulus (equal to fine)	1,463	
Bars and ingots	4,839	= 6,302
Afloat from Australia (advised by mail):—		
Fine copper		1,138
Afloat and chartered from Chili to Europe (advised by cable):—		
Fine copper		2,700
Total		Tons 46,631

Leadenhall street, May 1. HENRY R. MERTON AND CO.

MESSRS. RICHARDSON and Co. (May 1) report that the stock of Chili copper produce remaining unsold on April 1 was—ore, 2189 tons; regulus, 6040 tons; and copper, 1805 tons; increased by arrivals during the month to—ore, 2734 tons; regulus, 8025; and copper, 2365 tons. The private sales during the month were—ore, 545 tons; regulus, 1114 tons; and copper, 222 tons. And there was unsold at Swansea, on May 1—ore: Chili, 2189 tons; Australian, 503 tons; Portuguese, 857 tons; New Quebrada, 318 tons; Algerian, 128 tons; Italian, 42 tons; Spanish, 1114 tons; Dutch, 206 tons; British, 359 tons = 5746 tons; regulus, 6911 tons; copper, 2143 tons. These totals represent about 6300 tons fine copper. A sale of Cape ore took place on April 24—345 tons—averaging from 11s. 9¼d. to 12s. 3½d. per unit for an average produce of 28¼ per cent., and a cargo of Bolivian ore and regulus at 11s. 9d. and 12s. 3d. respectively. The most noteworthy feature in the copper trade during the past month has been the large quantity of Lake copper said to be sold, about 6000 tons; 75*l.* per ton is the price mentioned, and that it will all be consumed for making cartridges. The charters from the West Coast advised since our last issue are:—For the last half of March, 1250 tons bars and ingots, 550 tons furnace material for England, and 400 tons bars for France; for the first half of April, 400 tons bars and ingots for England, and 400 tons bars for France. The uncertainty of political events continues to exercise a depressing effect upon our market.

Stocks of copper again increased, and, as a consequence, prices gradually dropped. Although the charters for the first half of April were very light (being advised as 800 tons only) no stimulus was given to the demand. Chili bars are now 20s. lower than at the beginning of the month. Australian has fallen in proportion. The yellow metal trade was quiet, and the shipments to India very small. We subjoin our usual monthly statistics.

The imports of copper into England for the first three months of the following years were—1874, 19,212 tons; 1875, 21,584 tons; 1876, 17,885 tons; 1877, 22,042 tons; 1878, 19,627 tons. The exports for the same periods were—1874, 12,525 tons; 1875, 10,887 tons; 1876, 11,357 tons; 1877, 13,837 tons; 1878, 15,417 tons. The position from May 1, 1877, to May 1, 1878, was as follows:—

	Price.	Stock on hand.	Stock, including afloat and chartered. Advised by mail only.
1877—May 1	£ 69 0 0	Tons 29,585	Tons 35,968
June 1	69 0 0	29,312	34,844
July 1	69 0 0	29,523	35,578
August 1	69 0 0	29,893	34,513
September 1	67 0 0	31,004	35,437
October 1	66 0 0	31,823	36,239
November 1	65 10 0	31,454	36,177
December 1	63 10 0	30,701	36,861
1878—January 1	66 0 0	31,388	38,713
February 1	66 0 0	31,305	37,769
March 1	65 0 0	33,235	40,535
April 1	63 10 0	34,345	41,460
May 1	62 0 0	36,416	42,725

And the comparative positions at the same date of the past four years with the present:—

	Price.	Stock.	Stock, including afloat and chartered. Advised by mail only.
1874—May 1	£ 74 0 0	Tons 30,643	Tons 36,993
1875—May 1	83 0 0	23,514	30,551
1876—May 1	79 10 0	21,169	31,988
1877—May 1	69 0 0	29,585	35,968
1878—May 1	62 0 0	36,416	42,725

The charters to April 18, 1878, were 13,300 tons, against 13,200 tons in 1877.

Leadenhall-street, London, May 2. HENRY ROGERS, SONS, AND CO.

The copper market was depressed, and even the advice of light charters for the first half of April failed to give animation. There were no public sales of Wallaroo or Burra, these descriptions being somewhat neglected. In outside Australian brands some business was effected. The demand for English continues slack. Charters for first fortnight of April were advised as 800 tons—400 tons cake and ingot to United Kingdom, and remainder for the Continent. The sale of about 4000 tons Lake to the Continent was reported during the month, and a similar quantity was at the same time sold for American home consumption. We quote Chili bars 62*l.*, Wallaroo 72*l.* 10s., Burra 71*l.*, tough 67*l.* 10s., manufactured 72*l.* to 73*l.*, ore and regulus 11s. 9d. to 12s. 6d. The imports and exports from January to March were, by the Board of Trade Returns—

	1878.	1877.	1876.
IMPORTS.			
Ore Tons	18,696	18,431	15,109
Regulus	8,226	9,010	7,681
Copper	8,986	10,170	8,092
EXPORTS.			
Foreign raw	3,367	4,778	3,542
English raw	5,603	2,793	2,599
Manufactured, including yellow metal and brass	6,980	7,318	5,702

London, May 2. FRENCH AND SMITH.

THE TIN TRADE.

	March 31, 1878.	April 30, 1878.	April 30, 1877.	April 30, 1876.
Straits and Australian, spot Tons	8,518	8,453	8,825	6,374
Ditto, landing	351	855	314	1,149
Straits afloat	635	745	320	630
Australian, afloat	2,385	2,190	2,360	1,509
Banca, on warrants	1,571	1,144	930	606
Ditto, Trading Co.'s hands.	204	627	830	1,980
Ditto, afloat	350	438	74	313
Billiton, spot	1,647	1,853	1,128	1,163
Ditto, afloat	1,100	1,300	1,030	1,000
Australian tin in Holland	432	426	700	—
Total Tons	17,193	18,031	16,511	14,724
Deliveries during the month in London	1,019	902	713	980
Ditto, Holland	458	703	783	428
Total Tons	1,477	1,605*	1,496	1,574
Prices of Straits	£83 10	£81 0	£69 0	£72 0

		During 12 months ending Mar. 28, '78.	During 4 months, '78.	During 4 months, '77.
Shipments from Straits, in April	Tons	350†		
Ditto, Australia, ditto		750†		
Shipments from Straits to London	Tons	3,121	1,760	1,540
Shipments from Australia to London		9,079	2,875	3,202
Deliveries of foreign tin in London		11,446	4,128	2,991

* Also 219 tons overside to America.

† Estimated, exact figure not known, owing to interruption of cable.

London, May 1. A. STRAUSS AND CO.

We have to report another very dull market for tin. Transactions have been below the average at rather lower prices. With stocks accumulating both here and in London, the immediate outlook must be far from cheerful to holders. Banca has well maintained its price, sellers, however, coming out somewhat more freely towards the end of the month; we can now buy at 39¼ fl.—Billiton: Notwithstanding our heavy stock, holders have generally been very difficult to deal with—38 fl. was paid in the beginning of the month both for parcels on the spot and afloat; 37¾ fl. and 37½ fl. has since been taken, there being no buyers now above 37¼ fl. 10,000 peculs Billiton, offered in public sale at Batavia on 8th inst., fetched the average price of 4175 fl., costing to sell here about 38¾ fl. per steamer. The ensuing sale comprising the same quantity will be held on Monday, June 10.

The position of Banca tin in Holland on April 30, according to the official returns of the Dutch Trading Company, was—

	1878.	1877.	1876.
Import in April Slabs	9,688	13,888	9,935
Total four months	37,248	50,079	20,939
Deliveries in April	13,671	17,318	7,900
Total four months	39,994	47,889	28,057
Stock second hand	36,601	29,700	19,400
Unsold stock	16,207	26,581	65,375
Total stock	52,808	56,281	84,775
Afloat Peculs	7,000	1,175	5,000
Statement of Billiton:—			
Import in April Slabs	15,900	10,820	12,900
Total four months	48,245	32,357	35,579
Deliveries in April	9,267	4,072	4,793
Total four months	27,415	26,724	28,203
Stock	39,340	36,262	37,055
Afloat Peculs	12,000	16,000	15,000
Quotation } Banca	39¼ fl.	43⅛ fl.	43¼ fl.
April 30... } Billiton	37¾	41½	44

These combined returns of Banca and Billiton for 1878, compared with those for 1877, exhibit—An increase of the import for April of 27 tons; a decrease of the import for the four months of 218 tons; an increase of the deliveries for April of 48 tons; a decrease of the deliveries for the four months of 219 tons; an increase of the stock second hand of 937 tons; a decrease of the unsold stock of 324 tons; an increase of the total stock of 613 tons; a decline of the quotation of Banca of 5*l.* per ton. The Government Returns for the month of February are—

EXPORT OF TIN FROM HOLLAND.

	February.			Two months.		
	1878.	1877.	1876.	1878.	1877.	1876.
Germany Tons	221	306	335	431	543	506
England	16	32	1	16	51	8
Belgium	130	150	173	249	351	252
France	19	34	39	34	87	49
Hamburg	76	56	60	122	81	81
United States	—	9	13	—	36	15
Other countries	9	7	3	14	11	6
Total	471	603	624	857	1160	919

Rotterdam, April 30. EBELING AND HAVELAAR.

Arrivals here (Liverpool) during the fortnight of West Coast (S.A.) produce—Santa Lucia, from Coquimbo, 550 tons bars; Polestar, from Valparaiso, 250 tons bars; Santa Rosa, from Pisco, 453 tons ores; Liguria, from Valparaiso, 1090 tons bars, 90 tons ingots.—At Swansea: Professor Airy, from Pena Blanca, 635 tons regulus; Mary Jose, from Tocopilla, 565 tons ores, 263 tons regulus. Stocks of copper (Chilian and Bolivian) in first and second hands, likely to be available, we estimate at—

	Ores.	Regulus.	Bars.	Ingots.	Barilla.
Liverpool	—	917	13,557	—	—
Swansea	2189	6911	2,143	—	—
Total	2189	7828	15,700	—	—

Representing about 19,660 tons fine copper, against 18,692 tons April 15; 15,806 tons April 30, 1877; 9643 tons April 30, 1876; 12,966 tons April 30, 1875. Stock of Chili copper in Havre, 8759 tons fine, against 9382 tons April 30, 1877; stock of Chili copper afloat and chartered for to date, 9000 tons fine, against 11,800 tons April 30, 1877; stock of foreign copper in London, chiefly Australian, 6600 tons fine, against 4400 tons April 30, 1877. HARRINGTON, HORAN, AND CO.

Liverpool, April 30.

Tin values showed a downward tendency throughout the past month, and during the last few days the decline was rather rapid. The fear of a restricted make of tin-plates, and the consequent smaller consumption of tin, caused amongst some holders a desire to sell, and the market being void of speculation, it was impossible to quit large parcels without lowering values. The arrivals of Australian were heavy, and have largely swollen total imports, which now stand at 700 tons in excess of last year. It is satisfactory to note that consumption during the same time shows an excess of 900 tons over last year. Deliveries from London were 925 tons, and 720 tons from Holland. Shipments from the Straits are advised by wire as 350 tons; from Australia the exact figure has not yet come to hand, but is estimated at 600 tons. Below we give our usual statistics:—

	1878. April 1.	1878. May 1.	1877. May 1.	1876. May 1.
Foreign in London Tons	8,870	9,292	9,150	7,523
Banca in Holland	1,571	1,144	928	606
Billiton in Holland	1,647	1,854	1,133	1,158
Afloat for Europe, Straits, advised by mail and wire	670	720	360	680
Afloat, Australian ditto	2,000	2,000	1,900	1,800
Afloat, Billiton	562	750	1,000	930
Banca in Dutch Trading Co.'s hands	204	506	830	2,044
Banca afloat, by sailing vessels	350	438	73	312
Total	16,074	16,704	15,374	14,753

May 2. FRENCH AND SMITH.

SALE OF THE MERRYBENT MINING COMPANY'S ESTATE.—On Monday, at the King's Head Hotel, Darlington, the Merrybent estate, belonging to the Merrybent Mining Company, in liquidation, was offered by auction, by order of the mortgagee. The estate, which contains 347 acres, lies about midway between Darlington and Richmond. A great portion of it is underlaid with mountain limestone, while there is also freestone. The company in whose hands it has been have also worked lead and copper mines. A line of railway was formed by the same gentlemen as held the estate a few years since. The drawing engine, boilers, plant, and machinery on the estate were included in the sale. The company has never paid anything to its shareholders. The auctioneers were Messrs. Thomas Watson and Son. The bidding lay between Mr. Robert Henry Allan, of Blackwell Hill, Darlington, and Mr. Moscrop, agent to the Earl of Zetland, with the exception of one bid for 12,500*l.*, made by Mr. Ratcliffe, it was believed for Mr. H. K. Spark. The bidding commenced at 10,000*l.*, and went on by hundreds and fifties till 14,000*l.* was reached, at which figure if was knocked down to Mr. Allan. The reserve price, it was understood, was 13,000*l.*

PARIS EXHIBITION—BRITISH OFFICIAL CATALOGUE.—Our Royal Commissioners may be congratulated upon their punctuality. On May 1 they issued their handsome two-volume catalogue of the British Section of the Paris Exhibition, at the marvellously low price of 2s. 6d., which should suffice to bring every exhibitor's name before every visitor. It is illustrated with views of the Trocadero and Champ de Mars Palaces, admirably lithographed by Mr. F. Dangerfield, of Bedford-street, Covent Garden, and with large scale plans of the Exhibition and grounds, printed in France; and, in addition to a full list of the British exhibitors and the objects they have contributed, the volumes contain a useful digest of the French tariff, a summary of the Patent Laws, a statistical abstract of the population, trade, &c., of the United Kingdom and British Colonies, notes on machinery and live stock, and other information which will be found of interest and value.

STAMPING MACHINERY.—The invitation given by Capt. Teague a short time ago, to the mining engineers in Cornwall to enter into competition with their stamping machinery, has already been taken up by four of the intending competitors. Mr. Husband is, therefore, now erecting one of his pneumatic stamps, Mr. Sholl a direct acting pneumatic stamp. Mr. Cox a compound compression stamp, and Mr. Willoughby an elephant stamps—so called from the hammer being in the shape of an elephant's trunk. The experiments will take place at Tincroft Mine, side by side with the stamps that have done service there for many years.

PARACOMBE.—No. 2 lode produces splendid looking gossan, with lead and blende intermixed. The majority of shares in the mine having changed hands more extended operations are proposed to be carried out.

GREEN HURTH.—The rich course of ore below adit level, on No. 1 vein, continues fully worth 5 tons of ore per fathom. It is proposed to resume working the deep adit to undercut this part of the mine, and also to sink into the next limestone below adit, at or near to the point now so very rich.

ST. HARMON.—This company has now entered the market as a seller of ore, the first parcel of 20 tons having been sold this week at 10*l.* 5s. 6d.—a very satisfactory price considering the dull state of the metal market. The ore is proved by assay to be of exceptionally good quality, containing no less than 81 per cent. of lead, besides a fair quantity of silver. The prospects of the mine are said to have greatly improved lately, and at various points in the workings there is a probability of further important discoveries being quickly made. The shareholders, who have patiently waited for this happy realisation of their hopes, deserve congratulation upon their present excellent prospects. This is the fifth mine under the same management now selling ore, the others being Grogwinion, Wye Valley, West Wye Valley, Red Rock, and South Cwmystwith; and we understand that in all cases the returns are likely to be considerably increased.

COMBMARTIN.—The lode in the 28 west is producing some good work for silver-lead and blende, with every indication of further improvement. The lode in the 15 east is 4 ft. wide, producing lead, but not enough to value. The most important point of operation is the driving of the adit cross-cut from the valley towards Harris's lode, which will intersect this lode over 35 fathoms from surface; at this depth, at Harris's shaft, in the winze sunk south, the lode was valued at 8 to 12 cwts. of silver-lead per fathom, but in consequence of want of ventilation cannot be worked to advantage. When intersected by the cross-cut this lead ground can be stoped away at one-fourth the cost as compared from the winze, and between the winze and cross-cut a profitable lode is expected; and as there is a caunter lode to be intersected before reaching Harris's an important discovery may any day turn up.

DURBY SYKE.—The shaft from surface is now within a few feet of holing to the rise in the vein, for the purpose of thoroughly ventilating the mine. As soon as this is completed men will start to drive east on the new east and west vein recently discovered. The dressing-floors, house team, &c., that have been preparing are nearly

completed, and the prospect of soon having lead ore for sale is very good, as the vein is both easy to work and a good size.

SWEDEN AND NORWAY.

AN ENGLISH MECHANICAL ENGINEER, in Sweden, WISHES EMPLOYMENT. Used to the management of men. First-class references.
Address, "N. K.," care of Messrs. G. Street and Co., 30, Cornhill, E.C.

A MECHANICAL ENGINEER REQUIRES A SITUATION.—Has had a long experience in the erection and working of mining machinery and reduction appliances in Australia and California. Is competent to conduct the various operations connected with the reduction of gold and silver ores and the assaying of minerals.
Apply to "Quartz," West-end Newsrooms, 29, Leicester-square.

WANTED, a SITUATION as SUPERINTENDENT OVER BLAST CUPOLAS by an EXPERIENCED MAN. He would, if needed, undertake to build, or instruct to build, the same.
Apply W. WILLIAMS, 22, Orchard-street, Swansea.

TO MINE AGENTS.

WANTED IMMEDIATELY, a RESIDENT AGENT for a LEAD MINE in the WEARDALE DISTRICT.
Address, with copies only of testimonials, and stating salary required, to "Alpha," MINING JOURNAL Office, 26, Fleet street, Loudon, E.C.

LEAD DRESSER.

WANTED, a THOROUGHLY COMPETENT LEAD DRESSER, qualified to manage and reorganise, if necessary, floors for a considerable output.
Application, with testimonials, to be made to F. R. WILSON, 20, St. Helen's-place, London, E.C.

WANTED,—A GOLD MINING COMPANY REQUIRES the SERVICES of an UNDER AGENT practically acquainted with the Sinking and Timbering of Shafts, and the working of Alluvial Deposits. A knowledge of Quartz Mining and of the machinery employed in the Reduction of Auriferous Ores would also be of advantage. As the person appointed will be required to take entire charge during the absence of the Superintendent, it is requested that only those who are practically experienced, and can produce the highest testimonials as to character and ability, will reply to this advertisement.
Address in the first instance, with full particulars as to experience, age, salary required (with copies only of testimonials), and references, to "Australian," MINING JOURNAL Office, 26, Fleet-street, London.

WANTED,—A MINING ENGINEER of many years standing and experience at home and abroad seeks a RE-ENGAGEMENT. Speaks several languages. Highest references as to ability, &c.
Address, "G. F.," MINING JOURNAL Office, 26, Fleet-street, London.

TO COPPER, SILVER, AND OTHER SMELTERS.

WANTED, a SITUATION as SUPERINTENDENT over BLAST CUPOLAS by an experienced man. He would, if needed, undertake to build or instruct to build the same.
Address, W. WILLIAMS, 22, Orchard-street, Swansea.

RE-ENGAGEMENT REQUIRED by a MINING CAPTAIN.—Do not object to go abroad. Twenty years' experience in the management of Tin, Copper, Lead, and Silver Mines in Cornwall, Wales, and Portugal. Good references and testimonials.
Address, "N. E.," *Cornish Times* Office, Liskeard, Cornwall.

THE ADVERTISER has just secured a VERY VALUABLE SILVER-LEAD SETT, in which there are several rich lodes and thousands of tons of halvans that will pay 100 per cent. over working cost. Wants a gentleman to form a company or advance money to open and lay out the works. The amount will be small.
Particulars from "Miner," MINING JOURNAL Office, 26, Fleet-street, London.

THE CHINA CLAY TRADE.

THE ADVERTISER, who is engaged in the Management of China Clay Works, has exceptional opportunities for the EMPLOYMENT of CAPITAL in this IMPORTANT and PROFITABLE INDUSTRY. Owing to the temporary depression in trade, there are now opportunities for investment which may not occur again for years, and handsome profits are certain.
Address, "C. E.," MINING JOURNAL Office, 26, Fleet-street, London.

THE EGLWYSEG EXTENSION SILVER-LEAD MINE, west side of Minera Mountain, TO BE SOLD.
Apply to Mr. LYER, Amlwch, North Wales; or Mr. CRAVEN, Buckley, Chester or to Mr. W. H. RICHARDS, Mellor's Buildings, Exchange-street East, Liverpool.

RIO TINTO COMPANY (LIMITED).

Notice is hereby given, that the FIFTH ORDINARY GENERAL MEETING of the shareholders will be HELD at the Cannon-street Hotel, London, E.C., on TUESDAY, the 7th day of May, 1878, at Two o'clock precisely, for the purpose of receiving the directors' report and statement of accounts.
Holders of share warrants to bearer will receive a ticket of admission on depositing their warrants at the company's offices in London, not later than Twelve noon on the day of the meeting, or at the Deutsche National Bank in Bremen, two days previously.
The retiring directors are the Hon. T. C. Bruce, M.P., and Alexander Grant Dallas, Esq., who, being eligible for re-election, offer themselves accordingly.
The retiring auditors are Messrs Turquand, Youngs, and Co., who, being eligible for re-election, offer themselves accordingly.
By order of the Board, R. J. FENNESSY, Secretary.
Offices of the company, 2, Copthall Buildings,
London, E.C., 30th April, 1878.

THE RICHMOND CONSOLIDATED MINING COMPANY (LIMITED).

Capital 54,000 Shares of £5 each.
FOURTEENTH DIVIDEND.
Notice is hereby given, that the directors of this company have DECLARED a DIVIDEND of SEVEN SHILLINGS AND SIXPENCE PER SHARE (free of income tax), PAYABLE on and after 7th May next, at the company's bankers, the Union Bank of London, Princes-street, E.C.
And notice is hereby further given, that the Transfer-books of the company will be closed from the 3rd to the 6th May, both days inclusive.
By order of the Board,
HUBERT AKERS, Secretary pro tem.
44, Coleman-street, London, E.C., 30th April, 1878.

MR. W. MARLBOROUGH, STOCK AND SHARE DEALER, 29, BISHOPSGATE STREET, LONDON, E.C. (Established 21 Years), can sell the following SHARES, at prices annexed:—

75 Almada, 8s. 6d.	25 Gorsedd and Merllyn, £4 12s. 6d.	100 Penstruthal, 5s.
25 Birdseye Creek, 19s.		50 Fort Phillip, 11s.
75 Chontales, 11s.	20 Grugwiuion, £3 12s. 6	15 Rookhope, 19s.
30 Cambrian, £3.	25 Gleuroy, 17s. 6d.	10 Richmond, £9 11s. 3d.
10 Cargoll, £2½.	20 Hultafall.	10 Roman Grav., £8 2 6
10 Chapel House, £3 7s 6	15 Ladywell, 18s. 3d.	100 St. Bride Slate, £1¾.
100 Don Pedro, 11s.	30 Last Chance, 17s. 6d.	20 Tankerville, £4 2s 6d
20 Devon Con., £2 11s 3	15 Leadhills, £4.	40 Tecoma, 3s. 9d.
15 D'Eresby Con., £12.	30 N. Quebrada, £1 15s.	40 Tyn-y-Fron
2 D'Eresby, £80.	25 Newport Aber., £3 5s.	4 Van, £21.
25 East Van, £5 7s. 6d.	5 Minera, £11.	20 Wye Valley, £1 12s 6d
15 Eberhardt, £6 1s. 3d.	50 Pandora, 17s. 6d.	15 W. Wye Val., £3.
25 Frontino, £2 2s. 6d.	150 Pestarena, 5s. 3d.	25 W. Tankerv., 12s. 6d.
100 Flagstaff, 13s. 6d.	25 Pateley Bridge, £3 17 6	60 Yorke Penin., 5s. 3d.
20 Great Laxey, £19¾.	75 Parys Mount., 9s 8d.	

Shares bought and sold at net prices. Telegrams promptly attended to.
Specially Recommended for an early rise in price:—Temple, Gorsedd and Merllyn, Bodidris, Tyn-y-Fron, Hultafall, and Pandora.
EAST LOVELL.—FOR SALE, to close an account, FIFTY SHARES. Offer wanted.

DEVON AND CORNISH MINES.

THE DIFFICULTY experienced by London and other distant Mine Shareholders, in obtaining RELIABLE INFORMATION respecting the state of Devon and Cornish Mines, may be most effectually overcome by corresponding with the undersigned, who from personal inspection and investigation is in a position to give sound advice respecting same.
The advice given will be based upon sound judgment and ability, but at the same time so exceedingly fluctuating is mining that he does not in any way hold himself responsible, or subject to blame, should results not always equal expectations.
A Special Report and Inspection of any Mine in Devon or Cornwall for £2 2s.

SPECIAL BUSINESS IN
GREAT WHEAL RODD AND PARACOMBE SILVER-LEAD MINES,
These very promising Mines are especially worthy of the attention of everyone, as they undoubtly will prove the most profitable Silver-lead Mines of Devon and Cornwall. Particulars may be obtained from—
R. J. RUTTER,
MINE BROKER,
5, PYNE'S TERRACE, EXETER.

MR. WILLIAM SALMON, F.G.S., 22, QUEEN STREET, ULVERSTON,
MINING AND COMMISSION AGENT AND ACCOUNTANT.
SEVERAL VALUABLE IRON ORE, SLATE and LEAD ROYALTIES, TO DISPOSE OF.

MR. J. S. MERRY,
ASSAYER AND ANALYTICAL CHEMIST,
SWANSEA.

In the Court of the Vice-Warden of the Stannaries. Stannaries of Cornwall.

IN the MATTER of the COMPANIES ACTS, 1862 and 1867, and of the WEST JEWELL TIN MINING COMPANY (LIMITED).—ALL CREDITORS or CLAIMANTS of the ABOVE-NAMED COMPANY, who have not received notice from the Official Liquidator thereof that their claims have been already admitted, are hereby required to COME IN and PROVE their SEVERAL DEBTS or CLAIMS at the Registrar's Office, Truro, on Thursday, the 9th day of May instant, at Eleven o'clock in the forenoon, or in default thereof they will be EXCLUDED from the BENEFIT of any DISTRIBUTION made before such proof. And for the purpose of such proof they are to attend in person or by their solicitors or competent agents at the time and place above mentioned.
FREDERICK MARSHALL, Registrar.
Dated Registrar's Office, Truro, the 1st day of May, 1878.

In the Court of the Vice-Warden of the Stannaries. Stannaries of Cornwall.

IN the MATTER of the COMPANIES ACTS, 1862 and 1867, and of the ALVIGGAN AND BURNGULLOW TIN MINING COMPANY (LIMITED).—ALL CREDITORS or CLAIMANTS of the ABOVE-NAMED COMPANY who have not received notice from the Official Liquidator thereof that their claims have been already admitted are hereby required to COME IN and PROVE their SEVERAL DEBTS or CLAIMS at the Registrar's Office, Truro, on Wednesday, the 15th day of May instant, at Eleven o'clock in the forenoon, or in default thereof they will be EXCLUDED from the BENEFIT of any DISTRIBUTION made before such proof. And for the purpose of such proof they are either to attend in person or by their solicitors or competent agents at the time and place above mentioned.
FREDERICK MARSHALL, Registrar.
Dated Registrar's Office, Truro, the 1st day of May, 1878.

TO BE SOLD, BY PUBLIC AUCTION, under Decree of the Supreme Court of Newfoundland in Equity, in a suit between CHARLES FOX BENNETT, Plaintiff, and SMITH MCKAY and LEANDER GILL, Defendants, on Monday, the 2nd day of September next, at Twelve o'clock noon (if not previously disposed of by private sale), at the Court House, in St. John's, Newfoundland, that VALUABLE COPPER MINE and MINING PROPERTY called and known as the
UNION MINE,
Situate on the east and west sides of Tilt Cove, on the north side of Notre Dame Bay or Green Bay, Newfoundland, and near Cape John, with all ERECTIONS, IMPROVEMENTS, PLANT, and OTHER PROPERTY and EFFECTS thereto appertaining.
The mine is held under grant in fee from the Government of Newfoundland, containing two miles in length, by half a mile in breadth; a Licence of Occupation from the said Government, containing one mile square, west of and adjoining the Crown grant and land held under conveyance of fee-simple interests of former owners.
The title-deeds and documents, and plans and surveys of the property may be seen, and further information may be obtained, by application to PRESCOTT EMERSON, Esq., Q.C., Master-in-Chancery, at his office, in St. John's; or to either of the undersigned solicitors for the parties, or to either of the parties.
Conditions of sale will be published hereafter.
PRESCOTT EMERSON, Q.C., Master in Chancery,
St. John's, Newfoundland, January 23rd, 1878.
For further particulars, apply to C. T. BENNETT, Esq., No. 55, Queen's-square, Bristol; Messrs. HENRY BATH AND SON, Gresham House, London; or to PINSENT AND GREENE, Solicitors to the Plaintiff; WINTER AND CARTER, Solicitors for Defendant McKay.

SMALL FREEHOLD IRONWORKS FOR DISPOSAL.

TO BE SOLD, OR LET, on very advantageous terms, the
CLYDACH BAR IRONWORKS,
Situate between Brynmawr and Abergavenny on the London and North-Western Railway. The works comprise 12 puddling and 4 balling furnaces, 18 in. puddle bar roll train, and a 10 in. guide train, driven by a 42 in. breast water wheel, and an auxiliary engine with 26 in. cylinder. The steam is supplied by four horizontal boilers heated by the waste gases of the furnaces.
There are 60 workmen's cottages which can be included in the sale or letting of the works; also about 35 acres of freehold land, exclusive of that on which the works and railways are built.
For terms and particulars, apply to Messrs. WALFORD and GABB, Solicitors, Abergavenny; or Mr. BASIL JAYNE, Gilwern, near Abergavenny.

TO CAPITALISTS.

FOR SALE, A MOST VALUABLE, VERY PRODUCTIVE, WELL SITUATED LEAD MINE in SPAIN. The vein shows abundant quantities of unusually rich ore, testing about 76 per cent.
Near this possession besides are OFFERED FOR SALE or LEASE a few LEAD MINES, with rich veins for developing.
Address, Mr. ALBERT WILCKENS, Carlstrasse, 31, Carlsruhe.
April 16, 1878.

FOR SALE, at NEW PEMBROKE MINE, CORNWALL.—An excellent 80 in. cylinder PUMPING ENGINE, with FOUR good 12 ton BOILERS.
25 in. DRAWING ENGINE, and TWO BOILERS.
TWO SPARE BOILERS.
THREE IRON STAMPS AXLES.
100 fathoms FLAT RODS, 3½ inch.
A quantity of ROD PLATES and other MATERIALS.
Apply to Mr. JOHN POLKINGHORNE, PAR OFFICE, PAR STATION.

TO CAPITALISTS.

AN EXCELLENT SLATE QUARRY, in NORTH WALES, is OFFERED FOR SALE, which has been PROVED to be of the BEST QUALITY, and its position affords great facilities to work it both economically and remuneratively. There is abundant supply of water and ample tip room. The vein is about a mile long; average thickness, 60 to 80 yards. Slates may be conveyed either to a main line of railway or a prominent seaport at 2s. per ton. Leasehold 40 years to run. Price £7000.
For further particulars, apply to "E. 16," Brainerd-street, Liverpool.

A MOUNTAIN of SUPERIOR FIRE-CLAY FOR SALE.—An EXTENSIVE SETT, and quantity proved to be practically inexhaustible. Open quarry working, and no sinking. The clay is of exceptional quality; makes the finest white Dinas silica brick, also a brick equal to Stourbridge; also excellent cement. Contiguous to excellent shipping port and railway station.
WILL SELL the WHOLE or PART, or arrange with a COMPANY for PART CASH and SHARES. *Bona fides* only treated with.
Address for further particulars, "Fire Clay," care of Henry Greenwood, Advertising Agent, Liverpool.

TO MINING COMPANIES AND OTHERS.
VALUABLE MINING PROPERTY TO BE LET.

A VALUABLE MINE OF LEAD AND COPPER ORE having been discovered at WOODLANDS, CLONSILLA, near DUBLIN, the OWNER, Lord Annaly, is PREPARED to ALLOW properly authorised PERSONS to INSPECT it, with a view to making arrangements for LETTING the SAME.
Mining operations have already been carried on to an extent sufficient to show that the lodes of both lead and copper are most promising, and the situation peculiarly advantageous for working the mine and for carriage of ore both by canal and rail.
Mr. Thomas Poole, the steward of Woodlands, Clonsilla, will show the ground to persons desirous of inspecting the same on their producing a reference from any respectable merchant or firm.

TO BE LET FOR A TERM, THE OLD NORTH BUCKLAND IRON MINES, GEORGE HAM, BARNSTAPLE, DEVON.
For particulars, apply to Mr. JOHN LITSON, Countisbury, Tynmouth, Devon.

18 H.P. PORTABLE STEAM ENGINE, with link motion, reversing gear, ready for delivery; also gear to wind and pump.
A 9 h.p. VERTICAL STEAM ENGINE, with link motion, reversing gear (winding drum if required).
A 6-ft. PAN MORTAR MILL, VERTICAL ENGINE, and BOILER, with carriage and travelling wheels.
Apply to—
BARROWS AND STEWART, ENGINEERS, BANBURY.

WINDING ENGINES, NEW PRINCIPLE, best and most compact in the market. Several pairs ready.
PORTABLE WINDING AND SINKING ENGINES, the cheapest and most convenient and durable.
STEAM CAPSTANS AND HAULING ENGINES. The greatrst power in the space of any made.
HORIZONTAL, VERTICAL, AND PORTABLE ENGINES. First-class make and low price.
PUNCHING, SHEARING, DRILLING, AND OTHER MACHINES.
Many of the above secondhand, very cheap.
ALEXANDER SMITH, ENGINEER, THE MIDLAND MACHINERY STORES.—Offices: PRIOR STREET, DUDLEY.

TWENTY-FIVE H.P. PORTABLE ENGINE, FOR SALE, with link motion reversing gear, suitable for Pumping, Winding, &c., almost new, ready for delivery.
J. H. RIDDEL & CO., 49, JAMAICA STREET, GLASGOW.

MR. W. F. STANLEY, MATHEMATICAL INSTRUMENT MANUFACTURER TO H.M.'S GOVERNMENT, COUNCIL OF INDIA SCIENCE AND ART DEPARTMENT, ADMIRALTY, &c.
MATHEMATICAL, DRAWING, and SURVEYING INSTRUMENTS of every description, of the highest quality and finish, at the most moderate prices.
Price-list post free.
ENGINE DIVIDER TO THE TRADE.
ADDRESS—GREAT TURNSTILE, HOLBORN, LONDON, W.C

J. BERGER SPENCE AND CO.'S
GLOBE STEAM BOILER POWDER.
Effects a saving of over 15 per cent. in the cost of steam.
Increases the durability of the boilers.
Avoids the continual annoyance caused by scaling.
Produces complete circulation of the water in the boiler.
One lb. per 4-horse power dissolved in the feed-water daily.
Price 20s. per cwt. delivered. Casks free.
Testimonials and further particulars on application to—
J. BERGER SPENCE AND CO.,
31, LOMBARD STREET, E.C.

AGENTS WANTED.

GOLDENHILL COBALT, NICKEL, COLOUR, BORAX, AND CHEMICAL WORKS,
NEAR STOKE-UPON-TRENT, STAFFORDSHIRE
JOHN HENSHALL WILLIAMSON, MANUFACTURER AND REFINER
Purchaser of Borate of Lime and Tincal.

NICKEL AND COBALT REFINING, AND GERMAN SILVER WORKS, 16, OOZELL STREET NORTH, BIRMINGHAM.
STEPHEN BARKER begs to inform the Trade that he has the following articles for sale:—
REFINED METALLIC NICKEL.
REFINED METALLIC BISMUTH.
OXIDE OF COBALT.
GERMAN SILVER—IN INGOTS, SHEET, WIRE, &c.
NICKEL AND COBALT ORES PURCHASED.

MR. WILLIAM BREDEMEYER, MINING CONSULTING AND CIVIL ENGINEER, U.S. MINERAL SURVEYOR FOR UTAH AND IDAHO. NOTARY PUBLIC.
Geological examinations; reports on mining properties; surveys mines, railroads, and canals, and superintends the workings of the same. Prepares estimntes and plans for opening and working mines. Expert on mining questions before the Courts.
Address, "P. O. Box 1157," Salt Lake City, Utah.

JOHN L. M. FRASER,
BERSE COTTAGE, NEAR WREXHAM.
Fourteen years at the Great Minera Mines.
MINES FAITHFULLY REPORTED ON, AND MINING ACCOUNTS CAREFULLY AUDITED.

HENRY WIGGIN AND CO.
(LATE EVANS AND ASKIN),
NICKEL AND COBALT REFINERS
BIRMINGHAM.

Mr. E. JACKSON,
Associate of the Royal School of Mines,
ANALYST AND ASSAYER.
Assays or Complete Analyses made of Copper, Silver, Lead, Zinc, Tin, and other Ores. ASSAYING TAUGHT.
106, QUEEN VICTORIA STREET, LONDON, E.C.

EMMENS AND CO. (LIMITED),
MINING ENGINEERS AND MANUFACTURING CHEMISTS.
CHIEF OFFICE.
134, PALMERSTON BUILDINGS, BISHOPSGATE STREET, LONDON, E.C.
MINING DEPARTMENT.—The Management of Mines undertaken, and Technical Reports and Surveys made.
CHEMICAL DEPARTMENT.—Ores, Minerals, Acids, Salts, Arsenic, Pigments, Dyes, &c., manufactured and dealt in.

Mr. J. H. COLLINS, F.G.S.,
PUBLIC ANALYST for the County of Cornwall and Borough of Penzance,
UNDERTAKES the ANALYSIS of all articles of FOOD, DRINK, DRUGS, MINERALS, MANURES, SOILS, or COMMERCIAL PRODUCTS. Also the INSPECTION of MINERAL PROPERTIES.
Private Instruction given in Practical Chemistry, Mineralogy, or geology.
For terms, apply by letter, 57, Lemon-street. Truro.

C. H. WALKER AND CO.,
MINING AGENTS AND ENGINEERS,
VALPARAISO AND SAN IAGO,
CHILE.

J. J. ARIS AND CO.,
MINING ENGINEERS, MINERAL AND METAL MERCHANTS,
29, FENCHURCH STREET, LONDON, E.C.
Mines inspected and reported upon.

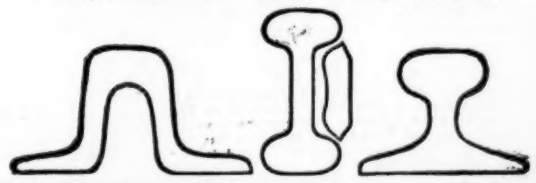
TO MINERS IN NORTH AMERICA.
CHEMICAL LABORATORY AND GENERAL MINING OFFICES,

EXAMINER OF MINES, MINERAL ASSAYER, &c.
Practical Instructions for Testing and Assaying, by Blowpipe, Chemicals, Crucible Scorifier, &c.
Author of the "Explorers', Miners', and Metallurgists' Companion," a practica work of 672 pages, with 81 illustrations. Price, second edition, $10·50.
Inventor of the "WEE PET" Assaying Machine, which obtained a GOLD MEDAL at the San Francisco Mechanics Institute Fair of 1869. Price $100.
Having had Thirty Years' experience (twenty in Cornwall and ten in U.S. America) offers his services to those requiring ADVICE on MINES or MINING, ENGINEERING, ASSAYING, SMELTING, MILLING, and CHEMICAL REDUCTION.
REFERENCES.
In England—The London *Mining Journal*, and leading Cornishmen.
In California—The *Mining and Scientific Press*, and principal Miners & Bankers.

MEXICO, NEW MEXICO, ARIZONA, UTAH, NEVADA, AND CALIFORNIA.

F. M. F. CAZIN,
MINING AND CIVIL ENGINEER,
At BERNALLILLO, NEW MEXICO, U.S. OF AMERICA,
Has 24 years' experience in Mining and Smelting, and 10 years' experience in American Business and Law, offers his services at moderate charges for Reporting on Mining and other Property in any of the above-named States or Territories; gives correct, safe, and responsible advice as to securing full titles and possession; and, as to best mode of utilising the property, will assist in settling existing difficulties by compromise, and in disposing of developed mining property when held at real value; offers his assistance for securing undeveloped mining properties at home prices. As to care taken in reporting, reference is made to the *Mining Journal* Supplement, April 1, 1876, containing report on property of the Maxwell Land Grant and Railway Company; as to technical standing, to the prominent men of the trade—compare *Mining Journal* of Aug. 30 and Nov. 31, 1872, and *New York Engineer and Mining Journal*, Feb. 28, 1874.

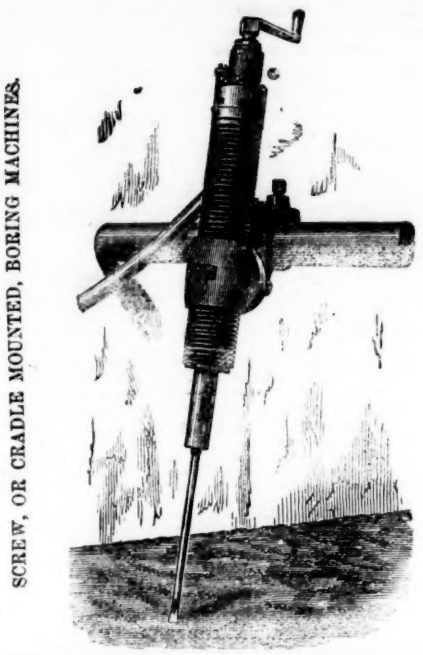
JOHN BEATSON AND SON, DERBY.



IRON AND STEEL RAILS, of all sections, from 10 to 82 lbs. per yard, new, defective, or second-hand.
POINTS AND CROSSINGS, FISH PLATES, BOLTS, NUTS, CHAIRS, AND SPIKES. LOCOMOTIVE ENGINES AND MACHINERY.
MALLEABLE AND PIG-IRON OF ALL KINDS.
Delivered at all Ports and Railway Stations in Great Britain.

"DARLINGTON" ROCK BORER.

NO VALVE.



SCREW, OR CRADLE MOUNTED, BORING MACHINES.

AIR-COMPRESSORS, DRIVING AND SINKING APPARATUS.

JOHN DARLINGTON, 2, COLEMAN-STREET-BUILDINGS,
MOORGATE STREET, LONDON, E.C.

PATENT DUPLEX LAMPS,

FOR COLLIERIES, IRONWORKS, &c.

SUITABLE FOR PIT BANKS, ENGINE HOUSES, &c., &c.

Each Lamp gives a light equal to 26 candles.
No breakage of Chimneys from heat.
Cottons last three months.
Will burn any mineral oil.

S. HOOPER,

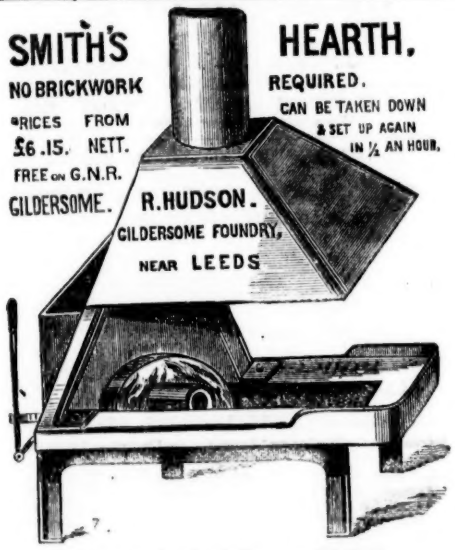
LAMP MAKER & OIL MERCHANT,
LOWER TEMPLE STREET,
BIRMINGHAM.

N.B.—Lamps made suitable for every purpose.
The BEST SIGNAL BELL MADE for MINING PURPOSES.
ILLUSTRATIONS ON APPLICATION.

IMPROVED IRON

SMITH'S HEARTH.

NO BRICKWORK REQUIRED.
PRICES FROM £6.15. NETT.
FREE on G.N.R.
GILDERSOME.
CAN BE TAKEN DOWN & SET UP AGAIN IN ½ AN HOUR.



GREAT SAVING IN ROOM.

WIRE ROPES.

JOHN AND EDWIN WRIGHT,

PATENTEES, ESTABLISHED 1770.

MANUFACTURERS OF EVERY DESCRIPTION OF IMPROVED

Patent Round and Flat Wire Ropes,

From the very best quality of Charcoal and Patent Steel Wire. Galvanised Wire, Ropes for Ships' Rigging, Galvanised Signal and Fencing Strand, Copper Rope Lightning Conductors, Colliery Ropes and Steam Plough Ropes made from the best Patent Improved Steel Wire.

PATENT ROUND AND FLAT HEMP ROPES,

Hemp, Flax, Engine Yarn, Cotton Waste, Tarpaulins, Oil Sheets, Brattice Cloth, Wagon Covers, &c., &c.

UNIVERSE WORKS, MILLWALL, POPLAR, LONDON.
UNIVERSE WORKS, GARRISON STREET, BIRMINGHAM.
CITY OFFICE, No. 5, LEADENHALL STREET, E.C.
All communications to be forwarded to the BIRMINGHAM ADDRESS.

Second Edition. Just published, price 8s. 6d.

A NEW GUIDE TO THE IRON TRADE OR, MILL MANAGERS' AND STOCK-TAKERS' ASSISTANT;

Comprising a Series of New and Comprehensive Tables, practically arranged to show at one view the Weight of Iron required to produce Boiler-plates, Sheet-Iron, and Flat, Square, and Round Bars, as well as Hoop or Strip Iron of any dimensions. To which is added a variety of Tables for the convenience of Merchants, including a Russian Table. BY JAMES ROSE.
Batman's Hill Ironworks, Bradley, near Bilston.

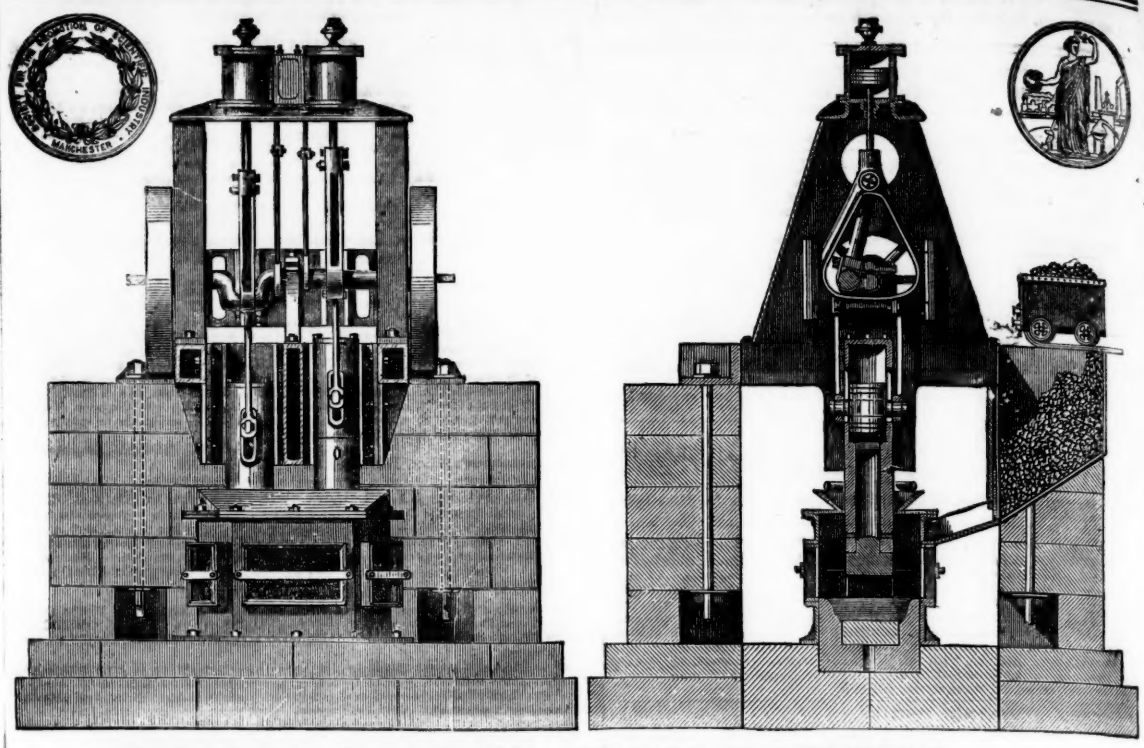
OPINIONS OF THE PRESS.

"The Tables are plainly laid down, and the information desired can be instantaneously obtained."—*Mining Journal.*

"990 copies have been ordered in Wigan alone, and this is but a tithe of those to whom the book should commend itself."—*Wigan Examiner.*

"The work is replete on the subject of underground management."—M. BANKS Colliery Proprietor.

To be had on application at the MINING JOURNAL Office, 26, Fleet-street, London



SHOLL'S PATENT DIRECT-ACTING PNEUMATIC STAMPERS,

For Pulverising Tin and Lead Ores, Gold Quartz, &c.,

SOLE MAKERS FOR CORNWALL,

N. HOLMAN AND SONS,

ST. JUST FOUNDRY, NEAR PENZANCE, CORNWALL.

All objectionable features of "wear and tear" common to the original and existing Pneumatic Stamps (driven by belts) are removed in this patent, and leather glands and stuffing boxes entirely dispensed with, the pneumatic piston being reciprocated into the compressing chambers by direct-action from without. These double machines are guaranteed to be of the capacity of 36 ordinary heads of cam and lifter stamps, and engineers will at once see that, inasmuch as the power is directly applied to its work (without the medium of belts and other gearing), the minimum consumption of coal (all other conditions being equal) must be the result.

The COST OF THESE MACHINES (including boiler) is about ONE-THIRD OF THE ORIGINAL CAM AND LIFTER STAMPS, to do the same work.

ROTARY STAMPERS SUPPLIED ON THE SAME PRINCIPLE, WITHOUT STUFFING BOXES OR GLANDS, WHERE RUNNING GEAR EXISTS, OR WITH HORIZONTAL CONDENSING ENGINES AND BELTS TO DRIVE THEM, IF PREFERRED.

Also, SOLE MAKERS OF STEPHENS' PATENT PULVERISER.

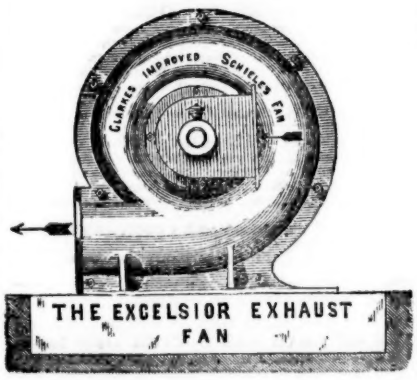
MINING AND OTHER MACHINERY CONSTANTLY ON SALE,
NEW AND SECOND-HAND.

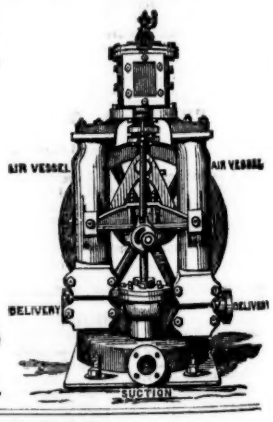
CLARKE AND SUTCLIFFE,

CLARKE'S IMPROVED SCHIELES' PATENT

BLAST AND EXHAUST FANS,

MINE VENTILATORS,
SCHIELES' PATENT TURBINES,
SLATE PLANING,
AND
SAWING MACHINES.
IMPROVED EXCELSIOR
DOUBLE-ACTING STEAM-RAM PUMP.

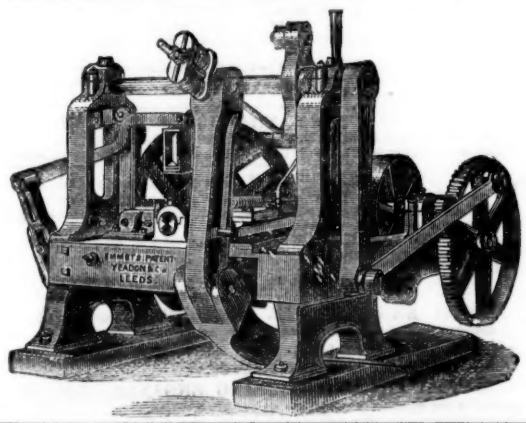




UNION IRONWORKS,
Rochdale Road, Manchester,
LATE
THE UNION ENGINEERING COMPANY, LIMITED.

EMMET'S

A1 PATENT BRICK MACHINE



Massive; durable; cheap; takes little power, and gives PERFECT SATISFACTION.

This is the ONLY Machine which presses the Brick equally on BOTH sides, each plunger entering the mould plate ⅜ in., and turning out 12,000 SQUARE, SOLID, PRESSED Bricks per day, READY AT ONCE FOR THE KILN.

SOLE MAKERS—

YEADON AND CO.,

CROWN POINT FOUNDRY LEEDS,
Makers of EVERY DESCRIPTION of Colliery and Brick Yard Plant.

LONDON AGENTS—
HAUGHTON AND CO., No. 122, CANNON STREET, E.C.
CONTINENTAL AGENTS—
PLAMBECK AND DARKIN, 171, QUEEN VICTORIA ST., E.C.

THOMAS TURTON AND SONS,

MANUFACTURERS OF

MINING STEEL of every description.

CAST STEEL FOR TOOLS. CHISEL, SHEAR, BLISTER, & SPRING STEEL.

MINING TOOLS & FILES of superior quality.

EDGE TOOLS, HAMMERS, PICKS, and all kinds of TOOLS for RAILWAYS, ENGINEERS, CONTRACTORS, and PLATELAYERS.
LOCOMOTIVE ENGINE, RAILWAY CARRIAGE and WAGON SPRINGS and BUFFERS.

SHEAF WORKS AND SPRING WORKS, SHEFFIELD.

LONDON OFFICES,—35, QUEEN STREET, CITY. PARIS DEPOT—12, RUE DES ARCHIVES.
NEW YORK STORE—102, JOHN STREET.

NOBEL'S DYNAMITE

Is the MOST ECONOMICAL and POWERFUL EXPLOSIVE for every kind of MINING and QUARRYING OPERATIONS; for blasting in hard or soft, wet or dry ROCKS; for clearing land of TREE ROOTS and BOULDER STONES; for rending massive BLOCKS of METAL; for SUBAQUEOUS and TORPEDO purposes; and for recovering or clearing away of WRECKS, &c.

ITS SAFETY is evidenced by the total ABSENCE OF ACCIDENTS in transit and storage; it is insensible to heavy shocks its GIANT POWER being only fully developed when fired with a powerful percussion detonator, and hence its great safety.

As a SUBSTITUTE FOR GUNPOWDER its advantages are the GREAT SAVING OF LABOUR, rapidity and INCREASE OF WORK done, FEWER and smaller BORE-HOLES required, greater depth blasted, safety in use NO DANGER FROM TAMPING, absence of smoke, unaffected by damp, &c.

For information, apply to the—

NOBEL'S EXPLOSIVES COMPANY (LIMITED), GLASGOW;

OR AT THE

London & Export Office, 85, GRACECHURCH STREET, LONDON E.C.

DISTRICT AGENCIES:—

HENRY KITCHIN and Co., 14, Tangier-street, Whitehaven.
F. H. EDWARDS, Forth House, Newcastle.
I'ANSON, ARMSTRONG, and Co., Middlesborough-on-Tees.
ALBERT RICKETTS, Dean-lane, Bedminster, Bristol.
LEIGH AND SILLAVAN, 16, Old Corn Exchange, Manchester.
GEORGE ROBERTS, East End Villa, Lower Barton-street, Gloucester.
J. H. BEAN and Co., 6, Albion-street, Leeds.
WILLIAM RICH and SONS, Basset-street, Redruth.
CROSS BROTHERS, 21, Working-street, Cardiff.
G. WILLIAMS and SON, Baker-street, Aberystwith.
WEBB and Co., Llanberis, Caernarvon.
J. T. EACHUS, Holywell.
JOHNSON and Co., Tower street, Dudley.
TODHUNTER and ELLIOT, Market-place, Douglas, Isle of Man.
J. C. AITKEN, 54, Bernard-street, Leith.
JOHN DONALD, 24, Belmont-street, Aberdeen.
WILLIAM WATSON, Main street, Coatbridge.
ROBERT HAMILTON, Douglas-street, Dunfermline.
JOHN D. M'JANNET, Coney Park, near Donny.
CHARLES CUNNINGHAM, 81, Murray Gate, Dundee.
R. and J. CARSON 8 and 10, Corn Market, Belfast.
JAMES PIKE, 179, Strand Road, Merrion, Dublin.
CLOHERTY and SEMPLE, Merchants'-road, Galway.

FACTORY—ARDEER WORKS, STEVENSTON, AYRSHIRE.

TONITE, OR COTTON POWDER.

THE SAFEST, STRONGEST, AND CHEAPEST OF ALL EXPLOSIVES.

Recommended to MINERS, PIT SINKERS, QUARRYMEN, and CONTRACTORS as the MOST EFFICIENT and ECONOMICAL BLASTING AGENT ever invented.

Results of practical experience show a saving of from 15 to 20 per cent. over the strongest explosives preiously in use.

It saves labour in drilling holes, as a less number of holes are needed.

It does not require thawing, but is ready for use at all temperatures and in all climates.

It can also be advantageously used in breaking up boulders, extracting stumps, removing wrecks, exploding torpedos, and for submarine purposes in general, as well as for signal lights and fog signals for ships.

OFFICES:

23, QUEEN ANNE'S GATE, LONDON, S.W.

WORKS: FAVERSHAM, KENT.

Agents DINEEN, SON, and Co., Leeds; JOHN RUSSELL, Whitehaven; R. J. CUNNACK, Helston, Cornwall; J. and W. SMITH, Chapel-en-le-Frith; W. VEITCH, Jedburgh, N.B.

TO PROPRIETORS OF MINES.

BLASTING POWDER

OF THE STRONGEST DESCRIPTION, THOROUGHLY TESTED. HIGHEST TESTIMONIALS FROM FIRST-CLASS ENGINEERS. ACCIDENTS IMPOSSIBLE. WILL BURN GRADUALLY AND NEVER EXPLODE, EXCEPT WHEN WELL RAMMED IN AND FIRED IN THE USUAL WAY. THE MORE IT IS RAMMED THE STRONGER ITS FORCE. MANUFACTURED COST PRICE 2d. PER POUND.

THE PATENT FOR SALE, or the Powder supplied in large quantities on royalty.

Apply, post paid, to—

MESSRS. SPRENT, SPRENT, AND PHIPPS,

HOUSE, ESTATE, AND COMMISSION AGENTS,

240, RUE DE RIVOLI, PARIS.

THE TUCKINGMILL FOUNDRY COMPANY

(TUCKINGMILL FOUNDRY AND ROSEWORTHY HAMMER MILLS),

CAMBORNE, CORNWALL,

Engineers, Iron and Brass Founders, &c.,

MAKERS OF EVERY DESCRIPTION OF

MINING MACHINERY, SHOVELS, GEARWORK, PUMPING, WINDING, AND STAMPING ENGINES.

ALSO OF

BLAKE'S STONE BREAKERS.

SOLE MAKERS OF

BORLASE'S PATENT ORE-DRESSING MACHINES AND PULVERISERS.

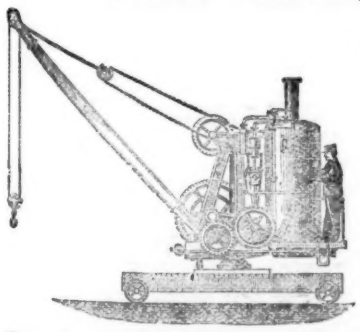
ESTIMATES GIVEN UPON INDENTS AND SPECIFICATIONS.

ILLUSTRATED CATALOGUES POST FREE ON APPLICATION.

LONDON OFFICE: 85, GRACECHURCH STREET, E.C.

CHAPLIN'S PATENT STEAM ENGINES AND BOILERS.

PRIZE MEDAL, INTERNATIONAL EXHIBITION, 1862



STEAM CRAES,

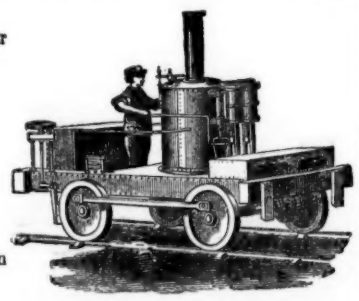
Portable or Fixed, for Railways, Wharves, &c., for unloading COAL, BALLAST, &c., To hoist 15 cwts. to 30 tons.

LOCOMOTIVES,

6 to 27-horse power. For Steep Inclines and Sharp Curves.

Gauge from 2 feet upwards.

Geared to draw very heavy weights in proportion to their power, and SPECIALLY SUITABLE FOR



Contractors' Work, Railway Sidings, Coal Mines, Quarries, Gas Works, &c.

WIMSHURST, HOLLICK, & CO., ENGINEERS.

Works: REGENT'S CANAL DOCK, 602, COMMERCIAL ROAD EAST, LONDON, E. (near Stepney Station).

CITY OFFICE: 2, WALBROOK, LONDON, E.C.

Parties are cautioned against using or purchasing Imitations or Infringements of these Patent Manufactures.

"Kainotomon" Rock Drill

SELECTED BY THE

BRITISH, PRUSSIAN, & SAXON GOVERNMENTS.

SUPERIOR **Air-Compressors, Coal-Cutters, Pumps, and all Mining Machinery.**

Secondhand ROCK DRILLS by FRYDON AND DAVIDSON'S make £25 each new £32

T. A. WARRINGTON,

30, King-street, Cheapside,

LONDON E.C.

JOHN TAYLOR & CO.,

MANUFACTURERS OF

Single and Double Leather Machine Belting.

Copper Riveted Leather Hose Pipes.

India Rubber Valves, Sheet, Washers, Belting, Hose Pipes, Packing, &c., &c.

Gutta Percha Pump Buckets, Round and Flat Bands, Tube, Sheet, &c., &c.

Brattice Cloth, Roofing and Hair Felt.

Harness Leather, Engine Bends, Hippopotamus and Walrus Hides, and every description of Leather used in Collieries and Mines.

Warehouse: 12, Dean-street, Newcastle-on-Tyne.
Works: Dean Court, ditto

CRAVEN AND SPEEDING BROS.,

MANUFACTURERS OF EVERY DESCRIPTION OF

WIRE AND HEMP ROPES

FOR

COLLIERIES, RAILWAYS AND SHIPPING, &c,

Charcoal and Steel Wire Ropes (Flat and Round), of best selected Charcoal and Steel Wire.
Guide Rods.
Galvanised Wire Signal Cord.
Galvanised and Plain Strand for Fencing.
Galvanised Wire Rope for Ships' Rigging.
Chains, Wire Rope Pulleys, Brattice Cloth, &c., &c.
Hemp Crab Ropes, of best selected Petersburg and Italian Hemp
Ditto Flat Ropes ditto ditto
Ditto Cordage ditto ditto
Manilla Rope, White and Tarred.
Flax Spun Yarn and Dressed Flax, for Packing.
Brown and White Spun Yarn.
Fine Dressed Petersburg and Italian Hemp, &c., &c.

Ships Rigging fitted to order. Estimates and special quotations supplied on application to

CRAVEN & SPEEDING BROS.

Wear Hemp and Wire Rope Works,

SUNDERLAND.

ELECTRIC BELL SIGNALS FOR COLLIERIES, FACTORIES, WAREHOUSES, &c.,

WITH OR WITHOUT GALVANIC BATTERIES.

NEW SYSTEM—CAN BE RUNG AT ANY PART OF THE ROAD. Cheap, safe, and reliable. Efficiency guaranteed. LINES OF TELEGRAPH erected and maintained. LIGHTNING CONDUCTORS, &c.

For estimates and particulars apply to—

SYDNEY F. WALKER,

LATE G. E. SMITH,

TELEGRAPH ENGINEER,

COMMERCIAL BUILDINGS, LONG ROW NOTTINGHAM

HEPBURN'S PUMP LEATHER WATERPROOF

By a special method of preparation, this leather is made solid, perfectly close in texture, and impermeable to water; it has, therefore, all the qualifications essential for pump buckets, and is the most durable material of which they can be made. It may be had of all dealers in leather, and of—

I. AND T. HEPBURN AND SONS,

TANNERS AND CURRIERS, LEATHER MILLBAND AND HOSE PIPE MANUFACTURERS,

LONG LANE, SOUTHWARK, LONDON

Prize Medals, 1851, 1855, 1862, for MILL BANDS, HOSE, AND LEATHER FOR MACHINERY PURPOSES.

DEBILITY AND NERVOUSNESS.

Free Edition, 152 pages, post free, in envelope, two stamps. The WARNING VOICE.—A Special Medical Book for Young Men, on the Cause, Consequence, and Treatment of certain forms of Debility and Nervousness, viz.—Mental and Physical Depression, Palpitation of the Heart, Noises in the Head and Ears, Impaired Sight and Memory, Indigestion, Pains in the Back, Headache, Piles, Constipation, Hysteria, Dizziness, Local Weakness, Muscular Relaxation, Nervous Irritability, Blushing, &c., resulting from Exhaustion of Nerve Power, effect of Overwork, City Life, Worry, Brain Toil, Intemperance, and other abuses of the system.

Address, Dr. H. SMITH, 8, Burton Crescent, London, W.C.

THE MINING SHARE LIST.

BRITISH DIVIDEND MINES.

Shares	Mines	Paid	Last wk.	Clos. pr.	Total divs.	Per sh.	Last pd.
1500	Alderley Edge, c, Cheshire*	10 0 0	—		12 11 8	0 5 0	Jan. 1876
4000	Brookwood, c, Buckfastleigh	1 18 0	1	½ 1	3 16 0	0 2 0	Nov. 1875
2000	Bryn Alyn,* l, Denbigh	10 0 0	—		0 7 0	0 7 0	Jan. 1877
6000	Cashwell, l, Cumberland*	2 10 0	2¼	1¾ 2¼	1 9 6	0 2 0	Aug. 1876
000	Carn Brea, c, t, Illogan†§	86 7 6	43	40 42½	308 0 0	1 0 0	Feb. 1874
2450	Cook's Kitchen, t, Illogan†§	24 4 9	2	1¼ 1½	11 17 0	0 7 6	Jan. 1873
10240	Devon Gt. Consols, c, Tavistock†*	1 0 0	2¾	2½ 3	116 15 0	0 5 0	July 1877
4298	Dolcoath, c, t, Camborne	10 14 10	31	29 31	112 6 3	0 5 0	Mar. 1878
5000	East Black Craig,* l, Scotland	5 0 0	—		0 10 0	0 10 0	Feb. 1877
400	East Darren, l, Cardiganshire	32 0 0	—		235 10 0	1 0 0	Aug. 1876
6400	East Pool, t, c, Illogan	0 9 9	9½	9 9¼	15 6 9	0 2 0	Feb. 1878
40000	Glasgow Cara., c* (30,000 £1 p., 10,000 15s. p.)		1⅜	1⅛ 1⅜	0 13 4	0 0 6	Feb. 1878
7500	Gorsedd and Merllyn Cons., l, Flint	2 10 0	5	4¼ 4¾	0 5 0	0 5 0	Aug. 1877
15000	Great Dyliffe,* l, Montgom	4 0 0	3	2 3	0 2 6	0 2 6	Apr. 1876
15000	Great Laxey, l, Isle of Man*	4 0 0	19	18 19	23 11 0	0 8 0	Apr. 1878
615	Gt. Retallack, l, bl, Perranzabuloe	5 18 6	—		0 1 6	0 1 6	May 1878
6400	Green Hurth, l, Durham*	0 6 0	1¼	1⅛ 1¼	1 18 0	0 3 0	Mar. 1878
20000	Grogwinion, l, Cardigan*	2 0 0	3¾	3½ 3¾	0 14 0	0 2 0	Jan. 1878
9830	Gunnislake (Clitters'), t, c	5 5 0	2¾	2½ 2¾	0 13 9	0 1 0	Oct. 1876
60000	Holmbush, a, c, s-l, Callington*	1 0 0	1¼	1½ 1¾	0 4 6	0 0 6	Sept. 1877
2800	Isle of Man, l, Isle of Man*†	25 0 0	—		82 5 0	0 10 0	Feb. 1876
20000	Leadhills,* l, Lanarkshire	6 0 0	4	3⅞ 4⅛	0 15 0	0 3 0	Mar. 1878
400	Lisburne, l, Cardiganshire	18 15 0	55	50 55	535 10 0	1 0 0	Feb. 1878
14000	Llanidloes,* l, Montgomery	3 0 0	1¼	¾ 1¼	0 9 0	0 4 6	Nov. 1876
9000	Marke Valley, c, Linkinhorne	5 3 6	⅝	½ ⅝	7 15 0	0 2 0	Jan. 1876
10000	Mellanear Copper, Hayle*	2 0 0	4½	3¾ 4¼	0 2 0	0 2 0	Jan. 1878
6000	Minera Mining Co., l, Wrexham*	5 0 0	16	14 16	67 10 8	0 2 6	Feb. 1878
20000	Mining Co. of Ireland, cl, c, l*	7 0 0	—		28 17 6	0 2 6	Jan. 1878
444	North Busy, c, Chacewater	3 9 6	5	4 5	1 10 0	1 0 0	July 1877
10289	North Hendre, l, Wales	2 10 0	—		2 2 6	0 10 0	Mar. 1878
30000	Panty Mwyn,* l, Mold (8794 iss.)	2 0 0	3	2½ 3	0 1 0	0 1 0	Feb. 187
6000	Pedn an-drea Con., t, Redruth	0 8 6	6¾	6¼ 6¾	0 9 0	0 9 0	June 1877
5000	Penhalls, t, St. Agnes	3 2 6	1	¾ 1	3 18 6	0 2 0	July 187
6000	Pennant, l, bar, North Wales*	5 0 0	5	4 5	0 10 0	0 5 0	Mar. 1878
45793	Penstruthal,* t, c, Gwennap	2 0 0	5s.	4s. 6s.	0 2 8	0 0 8	Nov. 1875
18000	Prince Patrick,* s-l, Holywell	1 0 0	2¼	1¾ 2¼	0 14 0	0 1 3	Jan. 1876
10000	Red Rock,* l, Cardigan	2 0 0	2½	2 2½	0 4 0	0 2 0	Jan. 1878
12000	Roman Gravels, l, Salop*	7 10 0	8½	7¾ 8 xd	7 15 0	0 5 0	Mar. 1878
512	South Caradon, c, St. Cleer	1 5 0	80	70 75	742 10 0	1 0 0	Mar. 1878
6123	South Condurrow, t, c, Camborne‡	6 5 6	11½	11 11½	3 13 0	0 8 0	Apr. 1878
12000	St. Harmon,* l, Montgom	3 0 0	3½	2½ 3½	0 6 0	0 3 0	July 1877
10000	So. Pr. Patrick,* s l. (8000 sh. issued)	1 0 0	—		0 7 0	0 1 0	Oct. 1875
12000	Tankerville, l, Salop*	6 0 0	4¼	4 4¼	4 17 0	0 5 0	Dec. 1876
6000	Tincroft, c, t, Pool, Illogan†	9 0 0	11½	10 12	50 8 6	0 5 0	May 1877
15000	Van, l, Llanidloes*	4 5 0	21	19 20	22 15 6	0 12 0	Jan. 1878
3000	W. Chiverton, l, Perranzabuloe†	12 10 0	13	12 13	55 10 0	0 10 0	Feb. 1878
1783	West Poldice, St. Day	10 0 0	15	13 15	1 19 0	0 4 0	July 1876
512	West Tolgus, c, Redruth	95 10 0	63	60 62½	26 15 0	1 10 0	Feb. 1878
2048	West Wheal Frances, t, Illogan	28 1 3	3	2½ 3	3 12 6	0 5 0	Oct. 1872
600	West Wheal Seton, c, Camborne†	47 0 0	12	10 12	446 0 0	0 15 0	Apr. 1878
12000	West WyeValley,* l, Montgom	3 0 0	3¼	2½ 3½	0 12 0	0 3 0	Nov. 1877
1024	Wh. Eliza Consols t, St. Austell	18 0 0	—		18 0 0	1 0 0	Apr. 1878
2048	Wheal Jane, t, Kea	2 13 10	1¼	1 1¼	8 5 0	0 5 0	July 1875
4295	Wheal Kitty, t, St. Agnes	5 4 6	2	1½ 2	11 19 6	0 2 6	Dec. 1874
25000	Wh. Newton, a, c, s, t, Calstock*	1 0 0	5½	5 5½	0 8 6	0 4 0	Sept. 1877
80	Wheal Owles, t, St. Just‡	98 15 0	50	30 35	522 10 0	4 0 0	Aug. 1872
3000	Wheal Peevor, t, Redruth	7 11 0	6¾	6 6¼	0 5 0	0 5 0	Apr. 1878
6000	Wheal Prussia, t, Redruth	0 5 0	7½	7 7½	0 4 0	0 1 0	July 1877
10000	Wye Valley, l, Montgomery*	3 0 0	2	1¾ 2¼	0 10 6	0 4 6	Oct. 1876

FOREIGN DIVIDEND MINES.

Shares	Mines	Paid	Last wk.	Clos. pr.	Total divs.	Per sh.	Last pd.
35500	Alamillos, l, Spain*†	2 0 0	1½	1 1½	1 19 3	0 1 0	April 1878
30000	Almada and Tirito Consol., s*†	1 0 0	⅝	⅜ ⅝	0 6 3	0 1 0	May 1876
20000	Australian, c, South Australia†	7 7 6	2	1½ 2	0 19 6	0 1 6	July 1877
10000	Battle Mountain,* c, (6240 part pd.)	5 0 0	—		0 10 0	0 10 0	Nov. 1872
15000	Birdseye Creek, g, California*	4 0 0	—	¾ 1	0 14 0	0 2 6	June 1874
20000	Cape Copper Mining,*† So. Africa	7 0 0	31	29 30	30 10 0	0 17 6	Mar. 1878
34433	Cedar Creek, g, California*	5 0 0	—		0 5 0	0 2 6	June 1875
35000	Cesena Sul. Co., Romagna, Italy*	10 0 0	—		0 10 6	0 3 0	Aug. 1877
15000	Chicago, s, Utah*	10 0 0	1½	1 1½	2 8 0	0 4 0	Nov. 1876
65000	Colorado United, s l, Colorado*†	5 0 0	2	2 2½	0 13 6	0 4 0	Jan. 1875
10000	Copiapo, c, Chili* (£20 shares)	16 15 0	—		7 11 5	0 3 0	May 1877
100000	Don Pedro North del Rey*†	0 16 0	⅝	⅜ ⅝	2 5 9	0 2 0	Mar. 1872
23500	Eberhardt & Aurora, s, Nevada*†	10 0 0	6¼	5¾ 6¼	1 8 0	0 3 0	Dec. 1877
70000	English & Australian, c† S. Aust.	2 10 0	1¼	1 1¼	2 15 9	0 1 0	Mar. 1877
80000	Flagstaff, s, Utah*	10 0 0	¾	½ ¾	4 2 0	0 5 0	July 1873
25000	Fortuna, l, Spain*†	2 0 0	5	4½ 5	6 19 10	0 5 0	April 1878
55000	Frontino & Bolivia, g, New Gran.*†	2 0 0	2⅛	1⅞ 2⅛	0 1 0	0 1 0	June 1876
80000	Gold Run, hyd.	1 0 0	—		0 2 4	0 0 4	Oct. 1872
68000	Kapunda Mining Co. Australia†	1 3 0	—		0 2 4	0 0 6	June 1873
20000	Last Chance, s,* Utah	5 0 0	⅞	⅝ ⅞	0 14 0	0 2 0	July 1873
15000	Linares, l, Spain*†	3 0 0	6	5½ 6	17 7 10	0 5 0	April 1878
65000	London and California, g*†	2 0 0	⅝	⅜ ⅝	0 1 0	0 1 0	July 1875
7837	Lusitanian, Portugal*† (£5 sh.)	3 10 0	—		1 11 6	0 1 6	Mar. 1873
5000	Mamm Copperopolis of Utah, c, s	10 0 0	—		0 5 0	0 5 0	Dec. 1872
5000	Mountain Chief, s, Utah*	10 0 0	—		0 4 0	0 4 0	Jan. 1873
10000	Pontgibaud, s-l, France†	20 0 0	28	26 28	25 8 0	1 11 0	Nov. 1877
130000	Port Phillip, g, Clunes*†	1 0 0	⅝	⅜ ⅝	1 10 0	0 1 0	Jan. 1878
54000	Richmond Consols, s, Nevada*†	5 0 0	9¾	9¼ 9¾	4 11 6	0 7 6	May 1878
40000	Santa Barbara,* g, Brazil	0 10 0	1½	1¼ 1½	0 4 9	0 1 0	April 1878
120000	Scottish Australian Mining Co.*†	1 0 0	2	1¾ 2	15 per cent.		Nov. 1877
80000	Scottish Austral. Mining Co., New	0 10 0	⅞	¾ ⅞	15 per cent.		Nov. 1877
112500	Sierra Buttes, g, California*†	2 0 0	2	1¾ 2	1 18 0	0 2 0	Oct. 1877
60000	South Aurora, s, Nevada*	5 0 0	¼	⅛ ¼	0 14 2	0 2 0	Nov. 1873
£253000	St. John del Rey*† (£5 stock & multiples dealt in)			305 315	½ year ... 20 p. ct. for Dec. 1876		
20000	Tolima, g, s* So. America	5 0 0	—		0 11 6	0 6 6	May 1874
25000	Victoria (London)*, g, Australia	1 0 0	¾	⅝ ¾	0 12 6	0 0 7½	Jan. 1878
15000	Western Andes, s,* New Granada	5 0 0	—		0 12 0	0 12 0	July 1876
21000	W. Prussian (5500 pref. sh. 10l. pd)	10 0 0	11	10½ 11	1 8 0	0 4 0	Jan. 1878

NON-DIVIDEND FOREIGN MINES.

Shares	Mines	Paid	Last Pr.	Clos. Pr.	Last Call
5000	Anguilla Phosphate, West Indies (4000 issued)	10 0 0	—		Fully pd.
12000	Argentine, g, Argentine Republic	5 0 0	¾	¼ ¾	Fully pd
3000	Bellavista, s, Peru* (£10 shares)	10 0 0	—		Fully pd.
30000	Blue Tent, hyd., California	5 0 0	3¼	2½ 3	Fully pd.
49935	Chontales, g, s, Nicaragua*†	2 0 0	⅜	⅜ ½	Fully pd.
16000	Condes of Chili, s-l	5 0 0	—	¾ 1	Fully pd.
20000	English Australian, g, Victoria*	1 0 0	⅞	⅝ ⅞	Fully pd.
35000	Excelsior Hydraulic Gold Washing Co., California*	6 0 0	—		Dec. 1871
100000	Exchequer, g, s, California*†	1 0 0	⅛	⅛	Fully pd.
40000	Holcombe Valley, g,* California	1 0 0	—		Fully pd
6000	Hornachos,* s-l, Spain	10 0 0	13	12½ 13	Fully pd.
12000	Hultafall,* l, bl, Orebro, Sweden	5 0 0	4¾		Fully pd.
12000	Hunter Consolidated, s-l, Utah	10 0 0	—		Fully pd.
20000	Imperial Brazilian Collieries, Brazil*	5 0 0	—		Fully pd.
100000	I. X. L., g, s, California*	1 0 0	—		Fully pd
50000	Javali, g, Nicaragua*	2 0 0	¼	⅛ ¼	Fully pd.
3500	La Manche, l, Newfoundland	10 0 0	—		Fully pd.
12000	Lanestosa,* l, s, Viscaya, Spain (£2 shares)	1 15 0	—		Mar. 1876
75000	Malabar, g, Colombia* (67165 issued)	1 0 0	¼	⅛ ¼	Fully pd.
40000	Malpaso, g, Colombia* (7400 pref. shares, fully paid)	1 0 0	⅜	¼ ⅜	Fully pd.
12000	Menzenberg, c, Honnef, Germany*	5 5 0	—		Fully pd.
4588	New Bensberg, i, l, Germany	5 0 0	—		Nov. 1876
66000	New Quebrada, c, Venezuela*	5 0 0	1⅝	1⅜ 1⅝	Fully pd.
20000	New Zealand Kapanga, g, Coromandel*	5 0 0	⅝	⅜ ⅝	Fully pd.
3000	Oregon,* g, Oregon, U.S. (preference shares)	4 0 0	—		Fully pd.
50000	Panulcillo, c, Chili*† (£80000 debentures)	4 0 0	1¼	¾ 1¼	Fully pd.
80000	Pestarena United, g, Italy*†	3 0 0	⅜	¼ ⅜	Fully pd.
50000	Providencia and New Rosario, s, Mexico*	1 0 0	—		Fully pd.
50000	Rica, g, Colombia* (40000 issued)	1 0 0	¼	⅛ ¼	Fully pd.
£2,181,000	Rio Tinto,* c, Huelva, Spain	Stock	59	57 59	Fully pd.
100000	Rossa Grande, g, Brazil*† (£1 shares)	0 19 0	⅛	⅛	July 1872
30000	Russia Copper, Orenburg and Ufa*†	10 0 0	1⅛	1¼ 1⅛	Fully pd
25000	San Pedro, c, Chili*	2 0 0	½	¼ ½	Fully pd
10000	Silver Plume, s, Colorado*	1 0 0	—		Fully pd
30000	Tecoma, s, Utah*	10 0 0	⅝	⅜ ⅝	Fully pd
43174	United Mexican, s, Mexico*†‡	28 15 3	2	1½ 2	May 1875
14000	Utah, g, s-l, Utah*	5 0 0	—		Fully pd.
25000	Virneberg, c Rheinbreitbach, Germany* (£2 shares)	1 15 0	—		Jan. 1878
75000	Yorke Peninsula, c, South Australia	1 0 0	⅛	¼ ⅛	Fully pd.
40000	Yorke Peninsula, c, South Australia Preference	1 0 0	1	¾ 1	Fully pd.

§ Have made calls since last dividend was paid.

FOREIGN AND MISCELLANEOUS STOCKS, BONDS, LOANS, AND TRUSTS.

	Closing Prices.	
Argentine, 1868, 6 per cent.	71	73
Bolivia, 6 per cent.	25	26
Brazilian, 1865, 5 per cent.	92	94
Chilian, 1866, 7 per cent.	99	102
City of Providence, 5 p.c. coupon bnds	100	102
Egyptian, 5 per cent. pref.	53	53½
Do., unified debt, scrip	30	30½
Do., 7 per cent., V.M.L.	66	70
Do., 9 per cent. guar.	72	76
Do., K. Daira Sanieh	38	40

	Closing Prices.	
Foreign and Col. Gov. Trust, 6 p. ct.	63	66
Do., 5 per cent., 2d issue	50	55
Do., 6 per cent., 3d issue	55	60
Do., 1872, 4th issue	50	55
Do., 1873, 5th issue	50	55
Peruvian, 1870, 6 per cent.	14½	15
Do., 1872, 5 per cent	12½	12¾
Russian, 5½ per cent. L. Mort.	65	70
Spanish, Quicksilver Mort., 5 p. ct.	97	99
United States Mort., 6 per cent.	99	101

NON-DIVIDEND MINES.

Shares	Mines	Paid	Last wk.	Clos. pr
40000	Aberdaunant, l, Llanidloes*	1 0 0	1	¾ 1
10000	Aberystwith,* s-l, Cardigan	5 0 0	—	
80	Albion, l, Cornwall	100 0 0	—	
7800	Alvig. & Burng.,* t, St. Aust.	3 0 0	1¾	1½ 1¾
12000	Assheton, l, Carnarvonshire*	5 0 0	1¼	1 1¼
50000	Ballycummisk,* c, Schull	2 0 0	—	
12000	Bedford Unit.,* c, Tavist. (1l. liab.)	0 1 0	⅜	⅛ ¼
28000	Belstone,* c, Devon (27,000 fy. pd.)	1 0 0	—	
8000	Blaen Caelan,* l, Cardigan	3 0 0	5	4¾ 5
3937	Blue Hills, t, c, St. Agnes	3 12 6	1	¾ 1
30000	Bodidris,* l, bl, Denbighshire	1 0 0	1¼	1⅛ 1⅜
1000	Bollihope Vale,* s-l, Durham	5 0 0	—	
200	Botallack, t, c, St. Just‡	123 15 0	—	
2000	Bowden Hill,* mn	1 0 0	—	
6000	Bradwell Moss Rake	1 0 0	1	⅞ 1
50000	Cambrian,* s l, c, Cardiganshire	2 0 0	3¼	3 3¼
3348	Cargoll, s-l, Newlyn‡	7 4 0	2¼	2 2¼
10000	Caron, l, Cardigan*	2 0 0	2¾	2¼ 2¾
20000	Central Foxdale, l, I. of Man* (2l. sh.)	1 5 0	—	
10000	Central Van,* l, bl, Llanidloes	5 0 0	—	
5120	Clementina, l, Llanrwst*	1 0 0	1¼	1 1¼
7500	Combellack,* t, Wendron	2 0 0	—	
6000	Combmartin, s-l, North Devon	0 7 0	⅛	⅛ ⅛
24000	Court Grange, s-l, Cardiganshire	1 0 0	1¼	1 1½
2000	Cwm Dwyfor,* c, s-l, Carnarvonsh.	1 0 0	—	
3000	Cwmystwith (New) [5l. shares]	4 0 0	—	
1280	D'Eresby Cons., l, bl, Carnarvon	10 0 0	14	11 13
512	D'Eresby Mountain, l, bl, Llanrwst	20 0 0	100	80 100
2000	Denbighshire Consolidated, l*	3 0 0	1	¾ 1¼
12000	Derwent,* l, Durham	4 0 0	1⅞	1⅜ 1⅞
10000	Dubby Syke, l, Durham*	0 15 0	½	¼ ⅜
6144	East Caradon, c, St. Cleer‡	2 19 0	1	¾ 1
4000	East Chiverton, l, Perranzabuloe	7 1 0	3	2½ 3
3000	East Craven Moor*, l, Pateley Bdge	10 0 0	10	9 10
6000	East Goginan, l, Cardigan	2 0 0	—	
8000	East Van, l, Llanidloes*	5 0 0	5½	5¼ 5¾
1722	East Wh. Lovell, t, Helston	9 1 0	½	¼ ½
20000	Elgar,* s-l, Cardiganshire	1 0 0	⅝	⅜ ⅝
8000	Fronvellan, l, Mont.* [4000 sh. fy. pd.]	1 0 0	—	
3950	Gawton, c, Tavistock	4 5 6	¼	⅛ ¼
12000	Glan Clwyd,* l, Gwyddelwern	1 0 0	—	
14000	Glenroy,* s-l, Isle of Man	4 5 0	⅞	¾ ⅞
10000	Glyn,* l, Llanidloes	2 0 0	⅝	⅜ ⅝
12000	Goginan, & Level Newydd, Card., l	2 10 0	—	
100000	Gold, g, Merionethshire	1 0 0	—	
20000	Goreu,* s-l, Carmarthen	1 0 0	1	¾ 1
20000	Gt. E. Foxdale, l, I. of Man (1l. sh)	0 18 0	—	
12000	Great Holway,* l, Flintshire	5 0 0	5½	5 5¼
9500	Great Pant-y-Pydew, l, Holywell	2 0 0	—	
253	Gt. Wheal Eleanor, t, North Bovey	1 15 0	2	1¾ 2
10000	Harehope Gill,* l, Durham (£1 sh.)	0 5 0	—	
600	Hartington Moor,* carb. l, Derby	1 0 0	2	1½ 2
6400	Harwood,* l, Durham	0 15 0	5s.	4s. 5s.
1024	Herod-foot, l, near Liskeard†	8 10 0	8	7 8
18000	Hingston Down, c, Calstock*†	0 5 0	⅛	⅛ ⅛
5000	Hush Eisteddfod Minera,* l	2 0 0	—	
200	Islay,* l, Scotland	28 0 0	—	
2500	Killaloe, sl, Tipperary‡	1 0 0	—	
6000	Killifreth, t, Chacewater	2 1 0	⅝	½ ⅝
25000	Kingston Con., s-l, Stoke Climsland	1 0 0	—	
	Ditto, preference	1 0 0	1⅛	1 1⅛
12000	Ladywell,* l, Salop	2 10 0	1⅛	¾ 1
12000	Ditto, 10 per cent. pref., 1l. each	0 10 0	⅝	½ ⅝
2500	Levant, c, t, St. Just	9 18 6	—	
6000	Livingstone Consols, t, St. Agnes	0 10 0	1	¾ 1
5120	Lovell, t, Wendron	0 16 0	2	1½ 2
25000	Llanrhaiadr, l, Montgomery*	2 0 0	—	
30000	Llanrwst,* l, Carnarvon	2 0 0	4	3 4
24	Mawston,* l, South Wales	50 0 0	60	60 65
6000	Medlyn Moor, t, Wendron	1 17 4	—	
11000	Melyndwr, l, Cardigan*	3 0 0	1¼	¾ 1¼
11000	Monydd Gorddu, l, Cardigan* (Red.)	5 0 0	—	
12000	Morfa Du, z, g, s, Anglesea	1 0 0	⅞	⅝ ⅞
25000	Nant-y-Ronen, s-l, Cardigan*	1 0 0	—	
15000	Nascent Copper*	1 0 0	—	
4768	New Bronfloyd,* l, Cardigan (5l. sh.)	3 16 0	4½	4⅜ 4½
8000	New Dolcoath, t, c, Camborne*	3 0 0	1⅜	1⅛ 1⅜
20000	New East Foxdale, s-l, Isle of Man	0 15 0	—	
16000	New Fowey Consols, t, St. Blazey*	3 0 0	2	1½ 2
1492	New Hendra, t, Breage	3 9 0	—	
3200	New South Merllyn, l, Flint*	2 10 0	1	½ 1½
3500	New Tincroft,* t, Lelant	0 0	3	2½ 3
5000	New Wheal Emma, c, Buckfastleigh	2 0 0	—	
4000	North Cornwall,* l, Cornwall	5 0 0	5½	5¼ 5½
30000	North Laxey,* Isle of Man	1 0 0	¾	½ ¾
2000	North Levant, t, c, St. Just‡	12 8 0	1	¾ 1
20000	North Prince Patrick,* l, Holywell	1 0 0	—	
5936	North Treskerby, c, St. Agnes	5 7 10	—	
2000	North Wheal Towan, t, c, Illogan	1 19 6	—	
6400	Oola Hills,* s-l, Limerick	5 0 0	—	
12000	Pandora,* l, Carnarvon	2 0 0	1	¾ 1
6000	Park Valley,* s l, North Devon	0 4 0	1	¾ 1
16923	Parys Mountain,* c, Anglesea	3 0 0	⅛	⅜ ½
12000	Phœnix & W. Phœnix, t, c, Link.§	5 7 3	5	4½ 5
4000	Pateley Bridge, l, Yorkshire	5 0 0	4	2¾ 3¾
12000	Plynlimmon, l, Llanidloes*	2 0 0	6s.	4s. 6s.
10000	Port Nigel,* s-l, Carnarvonshire	2 0 0	½	¼ ½
2000	Prideaux Wood, t, Llanivery	5 0 0	—	
5182	Prince of Wales, c, Calstock‡	2 6 0	2s.	1s. 2s.
6000	Relistian Consols, c, Gwinear	0 10 0	⅝	½ ⅝
15000	Rookhope, l, Durham*	1 10 0	1	⅞ 1
5000	Silvercross,* c, t, Marazion	1 0 0	—	
4200	Snowbrook, s-l, Montgomery	5 0 0	—	
000	So. Cwmystwith, l, Cardiganshire	2 0 0	4	3 4
3000	South Darren, l, Cardigan*	1 10 0	2⅛	1⅞ 2⅛
30000	South de Eresby Mountain, l	1 0 0	1⅜	1⅛ 1⅜
512	South Dolcoath, c, t, Redruth	12 5 0	1⅛	1 1⅛
5000	So. Molton Cons., s-l, No. Devon	0 3 6	1	¾ 1
18000	South Roman Gravels, l*	1 10 0	⅝	½ ⅝
6000	South Roskear, t, c, Camborne	7 5 0	—	
6000	South Tolcarne, t, c, Camborne	2 11 6	¾	½ ¾
937	South Wheal Crofty, c, Illogan	40 0 10	8	7 8
4500	South Wh. Frances, c, Illogan†	7 12 4	2	1¾ 2
6000	St. Lawrence, Amal., l, Flintshire*	2 0 0	—	
10000	St. Patrick, l, Halkin, Holywell*	1 0 0	1⅛	⅞ 1⅛
6000	Success, &c., l, Derb. (12,000l. called)	1 0 0	—	
16000	Sunnyside,* l, Durham	2 0 0	2½	2 2⅛
30000	Talybont, s-l, Cardiganshire	1 0 0	1¼	1 1¼
6400	Teesdale,* l, Durham	1 0 0	½	⅜ ½
14000	Teign Valley, l, bar., Bridford	1 0 0	—	
10000	Temple, l, Cardigan*	1 0 0	3¼	3¾ 4¼
10000	Tolgus Consols,* c, Redruth	5 0 0	4½	4 4½
12000	Trebeigh Consols, s-l, St. Ive	0 9 6	⅜	¼ ⅜
5000	Treleigh Wood, t, Redruth	6 1 0	—	
12000	Trethellan, s-l, Crantock*	2 0 0	—	
640	Truro*, l, Nerquis, Flintshire	10 0 0	—	
10000	Tyn-y-Fron,* l, Cardigan	1 0 0	1⅝	1⅜ 1⅝
20000	Van Consols, l, Llanidloes*	2 10 0	—	
1000	Vaughan*, l., Cardiganshire	10 0 0	—	
12000	West Assheton, l, Carnarvon	1 0 0	1	¾ 1
6000	West Basset, c, Illogan†‡	6 6 8	¾	½ ¾
5500	West Combmartin, s-l, North Devon	1 0 0	—	
7000	Ditto	0 2 6	—	
3000	W. Craven Moor, l, Pateley Bridge*	10 0 0	10	9 10
5000	West Godolphin, t, c, Breage	2 10 0	1⅜	1¼ 1½
12000	West Goginan,* Cardiganshire	2 0 0	⅝	⅜ ⅝
10000	West Llangynog, s-l, Montgomery	2 0 0	—	
3000	West Mary Ann, l, Menheniot	0 3 6	¼	⅛ ¼
50000	West Milwr, s-l, Flint	1 0 0	—	
5000	West of England Granite Company	2 0 0	2	2
20000	West Pateley Bridge, l, Yorkshire	1 0 0	2⅛	2 2⅛
1000	West Roskear, t, s-l, bl, c, Camborne	2 0 0	17	15 17
12000	West Tankerville,* l, Salop	3 0 0	¾	¾ ⅞
3000	Ditto, 15 per cent pref.	3 0 0	—	
3000	West Wheal Peevor, t, Redruth	0 10 0	6¾	6¼ 6¾
6000	Wheal Agar, c, Illogan	12 0 0	4½	3¾ 4¼
512	Wheal Basset, c, Illogan‡	26 2 6	8	7 8
6000	Wheal Coates, t, St. Agnes	2 0 0	—	
2635	Wheal Comfort, c, Gwennap	1 5 0	—	
6000	Wheal Crebor, c, Tavistock	4 3 0	1	⅞ 1
5179	Wheal Grenville, c, Camborne*	3 11 6	4	3⅛ 4
12000	Wh. Mary Hutchings,* t, Plympton‡	1 18 6	3½	3⅜ 3½
12000	Wheal Russell, c, Tavistock	2 1 6	—	
4096	Wheal Uny, t, c, Redruth	14 0 6	1	⅞ 1
2324	White Cliff,* l, Llanrwst	5 0 0	—	
25000	Wicklow, c, sul, i, Wicklow	2 10 0	—	

b, blende; cl, coal; c, copper; g, gold; l, lead; s, silver; sl, slate; s-l, silver-lead; t, tin; z, zinc.

* Limited Liability Companies; † quoted on the Stock Exchange; ‡ have paid dividends.

IRON AND COAL COMPANIES.

Shares	Company	Paid	Prices		
£100	Abbot, John, and Co. [L.]	£75 0 0	13	12	
15	Albion Steel and Wire Co. [L.]	14 0 0		—	
5	Alltami Colliery Co. [L.]	5 0 0	3¼	4	
100	Ashbury Co. [L.]	90 0 0	55	45	
10	Bagnall, John, and Sons [L.]	10 0 0	1¼	2¼	
10	Benhar Coal Co. [L.]	10 0 0	2	1	
50	Bilbao Iron Ore Co. [L.]	50 0 0	27	28	
10	Bilson & Crump Meadow Coll. Co. [L.]	10 0 0		—	
4	Blaen Cwmbach Coal Co. [L.]	4 0 0		—	
50	Blaenavon Iron and Steel Co. [L.]	50 0 0		—	
100	Bolckow, Vaughan, and Co. [L.] A	50 0 0	3	5	
50	Bowling Iron Co. [L.]	50 0 0		—	
50	Britannia Ironworks [L.]	25 0 0		—	
50	Brown, Bailey, and Dixon [L.]	40 0 0	11	9	
100	Brown, John, and Co. [L.]	70 0 0	13	12	
5	Cakemore Colliery Co. [L.]	5 0 0			
100	Cammell and Co. [L.]	80 0 0	4	5	
20	Cannock and Huntington Coal [L.]	10 0 0	6	5	
10	Cardiff & Swansea St. Coal Co. [L.]	9 0 0	8½	7½	dis
10	Cardigan Steel and Wire Co. [L.]	8 10 0	½	1	
10	Central Swedish Iron and Steel [L.]	10 0 0		—	
5	Chapel House Colliery	5 0 0	1	2	
50	Charlton Iron Co. [L.]	50 0 0	2¼	3½	
50	Chatterley Iron Co. [L.]	45 0 0	12	14	
10	Chillington Iron Co. [L.]	10 0 0	26	25	
10	Consett Iron Co. [L.]	7 10 0	2	3	
1	Consett Spanish Ore [L.]	1 0 0	9	10	
50	Cooke, William, and Co. [L.]	40 0 0	¼	½	
20	Darlington Iron Co. [L.]	12 10 0	32	30	
50	Davy Brothers [L.]	22 10 0	¾	½	
5	Diamond Fuel Co. [L.]	5 0 0	2	3	
23	Ebbw Vale Co. [L.]	20 0 0	14	12	dis
100	Fox, Samuel, and Co. [L.]	80 0 0	30	31	
10	General Mining Ass. [L.] (£1 returned)	9 0 0	2	3	
20	Great Western Coal Co. [L.]	17 0 0		—	
2	Gwyngwillim Colliery Co. [L.]	2 0 0		—	
15	Hopkins, Gilkes, and Co. [L.]	11 0 0	9	8	dis
50	Knowles, Andrew, and Sons [L.]	17 0 0	13½	14	
10	Llay Hall Coal, Iron, & Firebrick [L.]	10 0 0	3	1	dis
5	Littledean Woodside Coll. Co. [L.]	5 0 0		—	
50	Llynvi, Ogmore, & Tondu Co. [L.]	50 0 0	5	5½	
10	Lydney and Wigpool Iron Ore [L.]	8 5 0	10	9	dis
10	Marbella Iron Ore Co. [L.]	10 0 0	7½	7	dis
6	Mersey Steel and Iron Co. [L.]	5 0 0		—	
10	Midland Iron Co. [L.]	5 0 0	1¼	1	dis
5	Mold Argoed Colliery Co. [L.]	5 0 0	3	2½	dis
10	Monkland Iron and Coal Co. [L.]	10 0 0	7½	7	dis
4	Mwyndy Iron Ore [L.]	3 10 0		—	
100	Nant-y-Glo and Blaina (8 p. c. pref.)	100 0 0	16	20	
3	Nerbudda Coal and Iron [L. & Red.]	2 0 0	1	1½	pm
20	New Sharlston Collieries [L.] Pref.	20 0 0	17	16	
10	Newport Abercarn Coal Co. [L.]	10 0 0	4	4½	
10	Northmptn. Coal, Iron & Wagon [L.]	8 0 0		—	
10	Northfield Iron Co. [L.]	8 0 0	3½	3	dis
1	Norton Green Coal Co. [L.]	1 0 0		—	
35	Palmer's Shipbuilding and Iron [L.]	25 0 0	15	14½	dis
100	Parkgate Iron Co. [L.]	65 0 0	15	10	dis
20	Patent Nut and Bolt Co. [L.]	14 0 0		7½	pm
20	Patent Shaft and Axletree [L.]	10 0 0	½ dis	par	
20	Pelsall Coal and Iron [L.]	15 0 0	12	11½	dis
50	Phœnix Bessemer Co. [L.]	40 0 0		—	
50	Rhymney Iron Co. [L.]	50 0 0	16	18	
10	Richards and Co. [L.]	10 0 0		—	
10	Sandwell Park Colliery Co. [L.]	10 0 0	13½	13¼	
10	Ditto New	5 0 0	2	2½	pm
100	Shotts Iron Co. [L.]	100 0 0	90	93	
100	Sheepbridge Iron and Coal [L.]	55 0 0	20	19	dis
50	Silkstone & Dodworth Cl. & Iron [L.]	27 0 0		—	
20	Skerne Ironworks [L.]	20 0 0	15	14½	dis
50	Somorrostro Iron Co. [L.]	50 0 0		—	
25	South Wales Coal Co. [L.]	21 0 0	6½	7½	
100	Staveley Iron and Coal Co. [L.]	60 0 0	13	10	pm
100	Ditto ditto New	10 0 0	4	4½	pm
10	Swansea Valley Steam Coll. Co. [L.]	6 0 0			
100	Thames Iron Company	100 0 0		—	
50	Tredegar Iron and Coal Co. [L.]	20 0 0	11	9	dis
25	Ditto B. shares	25 0 0	21	23	
20	Ulverston Mining Co. [L.]	12 0 0	5	3	dis
10	Vancouver Coal [L.]	6 0 0	1½	1¼	dis
100	Vickers, Sons, & Co. [L.]	100 0 0	30	35	pm
50	Welsh Ironworks Co. [L.]	50 0 0		—	
25	W. Cumberland I. and Steel [L.]	20 0 0	14	12	dis
10	West Mostyn Coal [L.] (12 p.c. pref.)	5 0 0		—	
5	West Swansea Colliery Co. [L.]	5 0 0		—	
10	Whitehaven Iron Co. [L.]	10 0 0		—	
100	Wigan and Whiston Coal Co. [L.]	70 0 0		—	
100	Wigan Coal and Iron Co. [L.]	75 0 0		—	

WAGON COMPANIES.

Shares	Company	Paid	Prices		
10	Birmingham Wagon Co. [L.]	10 0 0	16¾	17¼	
10	Ditto, 2nd issue	4 0 0	2¼	3	pm.
10	Ditto, pref., 6 per cent.	10 0 0	11⅛	11¼	
20	British Wagon Co. [L.]	10 0 0	par	½	pm.
10	Gloucester [L.]	10 0 0	9¼	9½	
10	Ditto, 5th issue	5 0 0	¾	⅝	dis.
10	Met. Rail. Car. and Wagon Co. [L.]	5 0 0	3½	3½	pm.
5	Ditto, pref., 6 per cent.	5 0 0	5¾	6¾	
10	Midland	10 0 0	7	7½	pm.
20	North Central Wagon Co.	20 0 0	27¼	27¾	
5	Rail. Car. [L.] (Oldbury)	5 0 0	5¾	6¼	
5	Ditto, pref., 6 per cent.	5 0 0	5	5⅛	
20	Sheffield Wagon Co. [L.]	15 0 0	3¼	3¾	pm
10	Yorkshire Wagon Co. [L.]	10 0 0	4¼	5	pm

ELEGRAPH COMPANIES.

Shares	Company	Paid	Prices	
"St."	Anglo-American	100 0 0	60	60½
10	Brazilian Submarine	10 0 0	6½	6¾
20	Direct United States Cab'e	20 0 0	13⅛	13⅝
10	Eastern	10 0 0	7¼	7½
10	East. Exten., Australia and China	10 0 0	7⅛	7⅜
10	Great Northern	10 0 0	7⅛	7⅜
25	Indo-European	25 0 0	19	20
10	Mediterranean Extension	10 0 0	2½	3
8	Reuters	8 0 0	9½	10½
Stk.	Submarine	100 0 0	215	225
10	West India and Panama	10 0 0	2¼	2¾
20	Western and Brazilian	20 0 0	4¼	4¾
$1000	Western Union, 7 per cent. Mort. Bonds	$1000	110	112

MISCELLANEOUS.

Shares	Company	Paid	Prices		
Stk.	Atlantic and Great Western Leased Lines, Rental Trust	100 0 0	38	40	
25	Australian Agricultural	21 10 0	83	85	
25	Austral. Mort. Land and Finance [L.]	5 0 0	6½	7	pm
10	Avonside Engine [L.]	7 0 0	5	3	dis.
Stk.	Baltimore and Ohio, 6 per cent.	100 0 0	102	104 xd	
10	Brighton Aquarium [L.]	10 0 0	9½	10½	
Stk.	Cent. of New Jersey Con. Mort.	100 0 0	71	73	
Stk.	Cent. Pacific of Calif., 1st Mort. 6 p.c.	100 0 0	107	108	
25	City of London Real Property [L.]	12 0 0	1½	2	pm
5	Diamond Rock Boring	4 10 0	2¾	2¼	dis
15	English and Foreign Credit	8 0 0		—	
16	Fore Street Warehouse [L.]	14 0 0	10	11	pm
15	Foster, Porter, and Co. [L.]	10 10 0	20	21	
5	Gen. Phos. & Chem. Works Co. [L.]	5 0 0		—	
1	Greenhill [L.]	1 0 0		—	
5	Kit Hill Tunnel [L.]	1 0 0		—	
17	Hudson's Bay Company	17 0 0	10⅛	10⅜	
10	Huntington Copper and Sul. Co.	9 0 0	8¼	7¾	dis
Stk.	Illinois Central, $100 shares	100 0 0	77⅛	78½	
Stk.	Illinois & St. Louis Bridge, 1st Mort.	100 0 0	86	88	
Stk.	Ditto, 2nd Mort., 7 per cent.	100 0 0	38	41	
Stk.	Illinois Cent. Sinking Fund, 5 p. cent.	100 0 0	97	99	
Stk.	Ditto, 6 per cent.	100 0 0	107	109	
7½	Imperial Credit [L.]	7 10 0	7⅛	7¾	
—	Ditto, Surplus Certificate	—	6½	6¾	
Stk.	Lehigh Val. Con. Mort., A, 6. p. cent.	100 0 0	100	102	
10	Milner's Safe [L.]	10 0 0	7¾	8¼	
25	National Discount [L.]	5 0 0	9¼	9¾	
Stk.	N. Cent. Rail. Con. Mort., 6 per cent.	10 0 0	80	82	
10	Pawson and Co. [L.]	8 0 0	par	½	pm.
50	Peninsular and Oriental Steam	50 0 0	40	42	
Stk.	Pennsyl. Gen. Mort. 6 p. cent., 1910	100 0 0	106½	107½	
Stk.	Ditto, Con. Sink. Fund, 6 p. ct., 1905	100 0 0	94	95	
Stk.	Scottish Aust. Investment Company	100 0 0	193	193	
Stk.	Ditto, 6 per cent. Preference	100 0 0	123	128	
10	Silber Light (ord. sh.)	10 0 0		—	
20	Suez Canal shares	20 0 0		—	
12	Telegraph Construc. & Mainte. [L.]	12 0 0	27½	28	
5	Ditto, Second Bonus Three per Cents	5 0 0	2⅝	2⅞	
10	Tharsis Sulphur and Copper Co.	10 0 0	21	22	
Stk.	Union Pacific Land Grant, 1st Mort.	100 0 0	103	105	
Stk.	Union Pacific Railway, 1st Mort.	100 0 0	106	108	

London: Printed by RICHARD MIDDLETON, and published by HENRY ENGLISH (the proprietors), at their office, 26, FLEET STREET, E.C., where all communications are requested to be addressed May 4 1878.